



AMERICAN GAS

Association

MONTHLY

OCTOBER 1946

VOL. 28 · NO. 10

GAS is your best investment

There are tangible returns from an investment in GAS. This ideal fuel and modern Gas equipment pay off in the operation of cafeterias, lunch bars, fountain restaurants, service kitchens. For waterheating, too, there's no fuel like GAS.



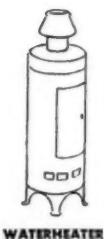
TOASTER

Take maintenance, for instance. The simplicity of waterheaters, toasters, ovens, coffee urns, and other modern Gas equipment reduces maintenance cost to an absolute minimum.



BAKE OVEN

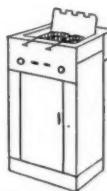
Sanitation is important, too. GAS is a clean fuel which requires no handling, leaves no waste for disposal. Employees like GAS because working conditions are



WATERHEATER

more comfortable and cleaner with Gas-fired equipment than with other types of fuel.

GAS is an economical fuel. The efficiency of modern Gas equipment, the low cost of GAS, and the extra advantage of constantly available supply, assure users of real fuel economy.



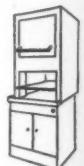
DEEP FAT FRYER

There are many other desirable features of GAS such as flexibility, automatic controllability, speed, which make GAS and modern Gas equipment your best investment.

The Commercial Representative of your local Gas Company can help you select Ranges, Waterheaters, Ovens, Deep Fat Fryers, Toasters, and other modern Gas equipment to fit your requirements.



COFFEE URN



BROILER

MORE AND MORE...

THE TREND IS TO GAS

FOR ALL COMMERCIAL COOKING

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE, NEW YORK 17, N.Y.



As this issue comes off the press thousands of gas men will be on their way to Atlantic City to take part in what should be one of the most memorable conventions and exhibitions in many years. Since it requires six months of preparation to build and stage such affairs, they should not be dismissed when the final gavel sounds. . . . Every employee in the gas industry would benefit materially by seeing the appliance exhibition in person, but the next best thing is to learn of the latest developments from those who have been present and seen with their own eyes. A list of the advances in appliances should be a "must" for every delegate who attends the meeting. . . . Addresses, papers and committee reports should be taken back to those at home. Written reports, employee meetings and the employees' magazine are excellent mediums for interpreting the vast amount of information available at such meetings. . . . A system of reporting the convention will have twofold benefits: first, it will clarify in the minds of those attending, the subjects on the program; secondly, those who remained behind will have the convention interpreted in terms of the local company's problems.

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Stage Set for Convention

THE stage is set for the twenty-eighth annual convention of the American Gas Association. The curtain will rise in Atlantic City, N. J., on October 7 and when it goes down on the eye-opening exhibition of gas appliances and equipment at noon on October 11, a new and exciting chapter in the history of the gas industry will have been written.

For many reasons, this is the most important annual gathering of gas men in decades. Among the more obvious which come to mind are its strategic timing: It is being held a year after the most destructive war in history. Some of the lessons we have learned from that war are just now being put into effect by our industrial leaders. Our manufacturers are midway in the process of putting out new models of equipment—equipment that in many cases has been delayed by months of material shortages and manpower dislocations. These factors alone suffice to make this a most significant meeting.

But let's look a bit further to see why this looms as perhaps the greatest of all gas industry conventions. Our industry, on a scale never before attempted, has underwritten an enlarged program of cooperative research, sales promotion and advertising. Many of the plans encompassed in this overall program have now jelled sufficiently to be the focal point of many informal if not formal discussions in Atlantic City.

The convention committee, headed by Irving K. Peck of Pittsburgh, has left no stone unturned to unearth talent and topics which should be an inspiration to all who attend. There are old popular standbys like the home service breakfast, sectional meetings, and dramatic promotional skits. There are heralded but untried newcomers like the employee relations forum, the manufactured and natural gas departmental meetings, and the publication editors' breakfast.

Several top-ranking national executives have been added to the star-studded program which was announced in our September issue. They include:

Elmo Roper, well-known public opinion sampler and na-

tional marketing authority, who will address the Tuesday morning general session. As head of a New York organization of 24 people and a field force of 250 people located in key spots in the country, Mr. Roper is well qualified to discuss "What the Public Thinks." He is best known for his conduct of Fortune Magazine Surveys of Public Opinion, which predicted the presidential elections in 1936 within one per cent, in 1940 within .5 per cent and in 1944 within .3 per cent.

Dexter M. Keezer, director of Economics Board, McGraw-Hill Publishing Co., Inc., will be the guest speaker at the Industrial and Commercial Gas Section luncheon on Tuesday. Mr. Keezer is an economist of outstanding ability and his background with the McGraw-Hill organization makes him admirably equipped to speak on "Future Industrial Production," a topic of special interest to industrial gas men.

And now we come to that stellar attraction—the exhibition sponsored by the Gas Appliance Manufacturers' Association—in itself worth the time and effort of a trip to Atlantic City. Gathered in the vast municipal auditorium will be a great spectacle of modern industrial development. More than 130 separate manufacturers will utilize their utmost showmanship and ingenuity to attract attention to their latest products—products, by the way, which will be instrumental in writing the future of the gas industry in the highly competitive period just ahead.

Exhibitors' sketches reveal plans for striking presentations of gas refrigerators, gas ranges, heaters, air conditioning units and many other products. Some of these products utilize new materials created during the war which have proved to have superior peacetime qualities.

These are but a few of the reasons why, as this issue comes off the press, many thousands of gas men and women will be converging on Atlantic City—the Mecca of convention-goers.

● Opposite: Laying of the Oklahoma Natural Gas Company's 16-in. pipeline, which extends from Sapulpa to Bristow, Oklahoma, photographed from a low spot by Ruth Canaday as the pipe was being swung into place on the skids over a ditch.

The Speakers



Robert F. Gerholz



W. H. Senyard



C. B. Boulet

Convention Head- liners



F. W. Fisher



J. A. Krug



Elmo Roper



Professor Erwin H. Schell



Arthur H. Motley



Dr. George W. Taylor



N.B.C. Orchestra Dir.
Harry Mejean

The Entertainers



Baritone Robert Nicholson



Soprano Bernice Rickman



Soprano Vivian Della Chiesa



Pianist Evalyn Tyner

California Utilization Problems

Economics of long-term policies affecting the supply and demand of natural gas and its orderly marketing

BY ROY E. WEHE

Assistant Director, Public Utilities Department, California Railroad Commission

I THINK I am close enough to the gas industry to know how well and how adequately you have met the severe and exacting service requirements during these past few years, to say you did an excellent job and one to be proud of. That is past, however, and your position and my position will be appraised from day to day by our performances and services rendered. The future lies ahead of us and while there is great uncertainty and, yes, much reason for real concern in respect to many phases of our economic and social life, yet for these very reasons there is presented a great challenge to overcome these adverse conditions, translate them into opportunities and move forward. If the past is any measure as to the future, we may look with confidence to your leaders to carry through in the splendid tradition of your industry.

It is my understanding that in the Pacific Coast Gas Association there are represented the five western states of Washington, Oregon, Nevada, Arizona, and California, along with memberships from Vancouver and Honolulu; that manufactured gas is served in each of the states, with natural gas the predominating service in Arizona

Presented before Pacific Coast Gas Association's 33rd Annual Convention, San Francisco, California, September 10-12.

and California; that of the nearly 2.5 million customers served, 91 per cent receive natural gas. It is also a fact that California stands first in the states of the Nation, with over 22 per cent as to both customers and general service sales, with approximately 15 per cent of the total sales volume. Texas stands first by a wide margin in respect to industrial sales.

During the 5-year period ending 1945, gas sales in these five western states have had a remarkable increase. Manufactured gas sales, exclusive of those in California, for the 4-year period ending 1944 showed a gain of approximately 50 per cent. Natural gas firm sales in California during the 5-year period ending last year nearly doubled—up 95 per cent. Firm industrial sales increased nearly 7-fold and surplus, exclusive of steam-electric generation, showed a gain of slightly less than 15 per cent.

The sharp decline expected by the industry has not as yet developed. Current consumption this year for general service is showing a continued growth, while industrial usage is sharply off. Gross revenues, however, are remaining about the same as last year.

Continued Growth

This high level of usage appears to have a fairly sound basis of continuing, with the likelihood of a continued growth after a short period of adjustment, having in mind the cyclical economic swings that likely will occur.

Population and industrial growth are generally viewed as two of the prime requirements for a continued growth. It would appear that the west coast states, on this basis, are destined for a remarkable forward movement. The Bureau of Census gives an increase of approximately 2½ million in population for these 5 states, due to migration alone, since the spring of 1940 to the middle of last year, of which about 70 per cent came to California. From all that comes to my attention, we are not only holding this growth but are still gaining in population.

Migration of industrial plants to the west coast likewise is at an ever increasing rate. The fuel requirements of these new plants will soon fill the

current loss being experienced from closing of war plants and thus add to the industrial load requirements.

With this background in mind we may well ask—What are some of the problems involved in meeting these new load requirements? Are there any basic or fundamental changes taking place? I think we can agree that there are basic and fundamental changes taking place and there are new and trying problems to meet, along with the many opportunities presented to a dynamic industry.

Changes Taking Place

Our state's known natural gas reserves have been heavily drawn upon and at a rate which has yearly averaged in excess of ½ trillion cubic feet during the last 3 years. New discoveries have been sharply less than the withdrawals. If our oil and gas geologists are reasonably correct as to the estimated known reserves of between 11 and 12 trillion cubic feet, you can see that our local known natural gas supply is far from being unlimited.

As you know, it is not alone the reserves that are important, but equally as important is the rate at which gas is available from those reserves. During the last few years there has been a material increase in the amount of gas that has been reinjected in the oil structure, in the interest of a greater ultimate oil production. For instance, such use of gas last year approximated 250 million cubic feet a day, about 45 per cent of the total firm gas sales of the state. Since it is understood that such gas will not in any appreciable quantities be available for sale to utilities for 10 or 15 years, this has brought about a new situation for our gas companies to cope with, especially those in the southern part of the state where substantially all their gas is from oil wells, as compared to the large volume of dry gas production in the northern portion of the state. In addition, there will be an increasing decline in oil well gas due to the decline in oil production, as the known oil reserves become depleted.

Happily, through energetic action on the part of the managements of these utilities, contracts have been secured and authorizations received to bring gas into California from the mid-conti-

inent fields. Mr. Bridge has discussed this matter most ably and fully with you. I do want to add and digress enough to say, however, that as the years roll by I am sure the bringing in of out-of-state gas to California will be looked upon as the beginning of a new era in the gas industry in this state and one of far-reaching importance as to the general economic well-being of the people of this great commonwealth.

The bringing in of gas in the quantities planned, however, will not, in my opinion, remove the necessity of carefully appraising load requirements in terms of utilizing our gas supply to the very best advantage, if you as a gas industry are adequately to meet the responsibilities of the future—both from the point of view of the commodity to be supplied and the price at which it can be sold.

We all know that large volumes of gas have been and are being sold on a so-called "surplus" basis. We know, too, that when such sales were inaugurated, gas supplies and pipe-line facilities were quite different than we find them now and during the past several years. As a matter of fact, in the true sense of the term "surplus," there is practically no such gas actually available at the present time. You will recall that industrial use of surplus gas, without standby, presented many difficult problems during the war. Such gas, too, has moved at very low rates; the average up to September 5 has been just under 14 cents per M.c.f., contrasted with a rate of between 22 and 23 cents, if placed on the equivalent oil price basis. Now with the 6½-cent increase in most of the schedules, based on the 40-cent increase in fuel oil prices previously authorized by the Office of Price Administration, the price disparity between the two fuels will be greatly lessened, though there will still be sold substantial volumes of industrial gas below the equivalent price of fuel oil, if the rates are not further changed or other controls inaugurated.

Problems Arising

This situation raises several questions. For instance, is it proper to continue industrial gas sales at these depressed rates? What shall be the policy in marketing industrial gas? Having in mind the generally admitted desirable utiliza-

tion characteristics of gas, are there good and sufficient reasons why industrial gas should be sold at prices that undercut the fuel market generally, assuming, however, that such sale prices do not carry full costs and thus are somewhat less than gas sold on a firm basis?

Let us briefly explore some of the issues raised.

First, however, as a background, let me recall to you that it has been the history of curtailable industrial gas sales in California that large volumes have moved at incremental rates that have been as low or lower than competitive prices of other fuels. This situation has been greatly aggravated during the last few years with oil prices permitted to rise while gas rates were frozen. During this whole period of surplus gas sales, if there be a preferred position it was not occupied by the general service customers but by the surplus industrial.

Second, it may be pertinent to observe and have in mind that if gas is sold in today's industrial market at rates less than what it will cost the gas industry to replace such gas for its customer requirements in the foreseeable future, giving consideration to the economic time factor, it is a serious question whether such a procedure is in the public interest and to the interest of the gas industry and its customers, especially if other desirable fuels can reasonably be utilized.

In developing an industrial gas policy, due consideration must necessarily be given to the various interests involved, not overlooking the industrial user himself, for after all industry furnishes to no small extent the very basis of support for the other classes of service.

In California our fuel position is relatively favorable, having in mind that foreign oil may be imported to balance our supply and demand requirements. During the war period we learned it wasn't the adequacy of the gas supply alone that was all important, but rather the sufficiency of the state's supply of all its fuels, and principally those of oil, gas and electricity. If we are to maintain a balanced state economy and utilize our fuels, from whatever source, to the best advantage, it seems to me we must continue with this over-all fuel concept, for there is a place for each fuel in our future markets.

Many of your large industrial customers could change to oil burning with but little inconvenience. If the price of the two fuels is placed on a comparable basis, then due to the inconvenience of curtailment of "surplus" gas and to the necessity of maintaining and utilizing a stand-by fuel, many users would unquestionably discontinue gas usage. Thus a reduction in industrial gas sales would be brought about by choice of the consumer himself.

Price and Volumetric Controls

It is believed that such a natural control might fairly readily have been made effective in more normal times. Now, however, with the general price upheaval that is taking place, it may be desirable to postpone bringing about full price parity between the two competitive fuels and bring into force some volumetric restrictions as to interruptible gas usage, if a better balance in fuel utilization is desired. To be more explicit, in an economy which is partially regulated and partially free, mal-adjustments may easily develop. This may be taking place now between the oil and gas industries and even within the latter. This becomes more realistic to you when a portion of your rates, such as surplus industrial, rise with the price of oil and others remain unchanged.

An examination of some of your



Pacific Coast Gas Association gives the A.G.A. appliance-testing program a boost in its current advertising

tariffs will show that if further increases in fuel oil prices take place, certain industrial gas rates will rise into and even above the rates carrying higher priority as to usage. Hence until our national economy becomes more stable, some volumetric controls, along with price advances that are feasible (assuming oil and industrial gas prices will move in unison but not necessarily resulting in any correction for price disparity) appear to be the most practical means, at the present, to bring about reasonable distribution of gas utilization as between the different customer groups.

Interruptible Gas Sales From Dry Gas Reserves

In this discussion dealing with some of the problems arising out of the industrial gas sales, and especially those characterized as "surplus," I trust you will not gain the impression that it is my view that the policy of selling surplus gas competitively with other fuels was wrong. In my opinion it had its place, as even it does today, but as to the latter on a much lesser scale. This thought leads to a consideration of "surplus" sales, where the gas supply is essentially from dry gas reserves and when there is essentially no gas wastage and hence no excess gas to be disposed of. However, some reduced volume of such

sales may well be justified for an indefinite period.

The designation of sales of this character likely should be changed from "surplus" to "interruptible." Such sales, when commanding a proper price, have a real place in the economic operation of a gas system, through the utilization of excess line capacity during the off-peak season, as well as providing what may be looked upon as terminal storage, from which the daily swings in load requirements of the firm customers may, in part, be secured through curtailment of the interruptible service.

State Coordinated Marketing Policy

Closely related to these general problems of industrial gas sales are marketing policies and control as between the two major geographical divisions of this state. At the present time, for example, the availability of gas is more abundant in the northern section, due to the dry gas supply, than it is in the south. "Surplus" gas curtailments in this area have been very small, while in the southern part it has been the largest in its history, with curtailments extending into the summer period, in order to store gas underground for winter and because of lessened supply and heavy loads. One may ask, is it wise to thus

draw heavily on the dry gas reserves to serve this low-priced industrial load?

During the initial years, when out-of-state gas becomes available, Southern California will have greatly increased supplies during the summer period and might conceivably temporarily develop considerable new interruptible industrial gas load. On the other hand, by pursuing a middle-of-the-road course, some of the San Joaquin Valley oil-well gas moving south might find its way to the northern markets and dry gas, to that extent, could be conserved for future requirements and, in part, be returned in later years to the southern markets.

This leads to the thought as to the desirability of maintaining fairly reasonable coordinated handling of interruptible gas sales as between the two sections of the state. Contrary action might well lead to an uncontrolled splurge of industrial gas sales with dissipation of dry gas reserves and the necessity of customer reconversion to other fuels in a comparatively short period of time.

Similarly, if industrial gas were comparatively plentiful in one section of the state and scarce in another, such conditions would soon be reflected in possible changes in the locations of existing plants and would influence the location of new plants. Accordingly, there would seem to be (*Continued on page 462*)

The Use of Words

Of all the many afflictions which befall the world, the careless use of words may not be the worst, but it certainly adds to all the other sins and sufferings of mankind, and makes them harder to bear. Perhaps, too, the wrong use of words, whether intentional or due to thoughtlessness, most effectively prevents a cure. This is so whether a person merely fools himself, or herself, or uses the wrong word to tangle up the thinking of others.

You would not thank a doctor who told you that you had a broken leg, when in fact what ailed you was a broken arm; or hives when you were breaking out with the smallpox. Lawyers, when they write a contract, spend a great deal of time on definitions. Then they can use labels, for convenience, to

their heart's content, because everybody can know what the labels, or words, mean.

Yet people in their talk to each other—and even to themselves—are careless, or ignorant, or slipshod in what they call things. Americans are supposed to be the world's worst offenders in this way. We can question that, if, at the same time, we decide to hold ourselves more strictly to what is actually meant, and test, even in our own talk, what our words really say.

Words change their meanings with use, abuse and misuse. The real trouble comes when a word is half-way between its real meaning and a new one. Such a word is "propaganda." It is a good word, often misused. Most propaganda is good. The greatest blessings that have come to mankind have been propaganda. We would never have received them had it not been for propagandists.

But there is good propaganda, that is, the spreading of truths, and there is bad propaganda, harmful, or hateful, or untrue. How easy it is, then, in using this word, to add

one other little word to it which tells which kind you mean, good or bad!

What brings this up is a remark made to me that this publication is "too much propaganda," meaning, of course, matter dealing with the company for which we work.

There is, however, one matter or subject which is of common interest to all of us; that subject is the company for which we work, the work which each of us does for it, and the work which, collectively and as a company, some 2000 employees of us do for the community which we serve and from which we derive our means of livelihood. Our bread-and-butter, in a word. If that is not important, will somebody please tell me what is. To most of us, also, it is interesting. That means making a living and enjoying the scenery as we go along. It is a good way of going through life, whether one works for the gas company, or does any other kind of work. Because work we all must.

—J FRENCH ROBINSON, President, The East Ohio Gas Co., in the September, 1946, "East Ohio News."

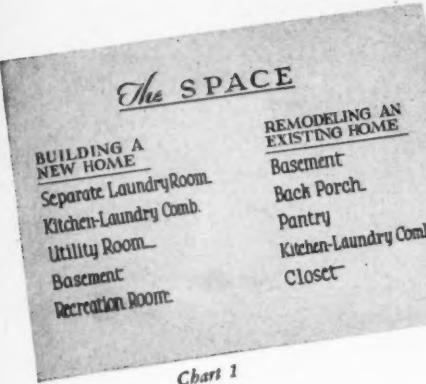


Chart 1



Chart 2



Chart 3

Planning the Home Laundry

Equally important as improved laundry appliances for quick and easy washdays is the well-planned design and proper arrangement of the home laundry itself



Marguerite Fenner

THE Good-housekeeping Institute recently said that perhaps there are no brighter prospects for future home improvements than those in view for laundering. The promise is one of greater saving in time and effort, and more effective results, not only through improved laundering appliances but through better design and arrangement of the home laundry itself.

"Blue Monday" today is just as blue as it was thirty years ago because laundry rooms as such have not kept pace with advancements and improvements elsewhere in the home. The trouble with most homes is that no space has been allotted for this very important job; clothes are still being washed all over the house—in basements, kitchens, back porches and bathrooms.

Strange as it may seem, homes have been built for eating, bathing, sleeping and relaxing, with no consideration given to the fact that these functions are merely *end products* of the housework that has to be done every week, which includes cooking, cleaning, washing and ironing.

BY MARGUERITE FENNER

Pacific Gas and Electric Co., San Francisco, Calif.

And so we decided that an important service to our customers would be to help them plan their homes so that women would have workshops designed for housework. The first step in this plan was our kitchen planning lecture-slide presentation which in the past eight months has been presented before some 375 groups. As a result of this program many requests were received for a similar presentation on laundry planning.

"Planning the Home Laundry" is a 45-minute lecture with 26 Kodachrome slides, eight of which are charts. With the first four charts we discuss the problem of getting clothes washed, dried and ironed.

With Chart 1 we talk about where to put the laundry. In the new home space can be planned; in remodeling, space which is already there must be utilized. Quite often there is a back porch, pantry, or closet which could be made into a compact little laundry. For many old homes where kitchens are too large in the first place, the kitchen-laundry combination might be the logical solution.

With Chart 2 we discuss the major tools needed for washing clothes. For

some of these, floor space and proper arrangement must be planned; others need to be built in during construction or remodeling. Here we tell our water heating story, discussing requirements for both the conventional-type and automatic washers.

Chart 3 calls attention to a long list of minor tools needed for laundering. The problem here is one of storage and, to save time and steps, supplies should be kept near the place where they will be used.

With Chart 4 we talk about the pattern of work. As in planning the kitchen, planning the laundry is merely eliminating the haphazard pattern of work which grew out of placing equipment just any place as shown on the left of the chart. There are always six steps to completing the family wash: First, gathering the soiled clothes together and preparing them for washing, which means mending and sewing on buttons, and sorting them into the various loads for the machine; second step is the washing; third, drying; fourth, ironing; fifth, folding; and sixth, storing the clean clothes. On the right, the pattern of work has been arranged into a continuous work cycle, the result of planning.

This suggests planning the laundry by work centers, each center designed for the work which will be done there

(Chart 5). The preparation center should have work counters for sorting clothes and for stain removal; cabinets above would store supplies right where they are needed, and below the counter would be an ideal place for a couple of bins for storing soiled clothes. Next to this center would be the washing machine and sink, then the clothes drier, the ironing machine and the ironing board.

Having thoroughly discussed the problem with charts, and having brought forth a line drawing solution, it is now time to supply color and glamour, and we do this with colored perspective illustrations of laundry rooms.

In developing this program, we assembled colored pictures of laundries and had line drawings made from some of these to conform with the specific arrangement. Therefore Chart 4 is followed with a slide of a laundry built on this floor plan. This enables the women to visualize what the room will look like and to fully appreciate the basic arrangement.

Charts 5 and 6 present kitchen-laundry combinations and each is followed with a colored slide of these rooms.

We were fortunate in having two sets of "before and after" pictures of basement laundries and, with these, we are able to tell an interesting story of remodeling. First, we show the basement as it was "before," then a line drawing (Chart 7) to discuss good arrangement and, finally, the colored slide of the

basement after remodeling. Women like making over anything from hats to husbands and, as we expected, these base ment pictures really created interest.

Since the utility room is a new idea to most families, we talk about these in detail *Better Homes and Gardens* and *McCall's Magazine* each gave us permission to have slides made of the utility rooms recently shown in these two publications. Two of these were for new homes and one was designed from a street-level garage. Because other than laundry equipment is shown in each of these, it gives us an opportunity to tell at least a partial story on cooking, refrigeration, home freezing and house heating.

Few families can afford at one time all the equipment shown in most of the slides we show, so we stress the importance of a basic plan which will permit adding new appliances gradually and still maintain a good pattern of work.

"Planning the Home Laundry" has met with unexpected enthusiasm from the groups of women who have already seen it, no doubt because they have been completely surprised with the idea that laundry rooms as such could be attractive, pleasant workshops, *designed for them*. For us, it has been a "natural" to follow our kitchen planning program and has given us a well-rounded plan which enables us to tell the complete story of gas for the four important jobs in the home: Cooking, Refrigeration, Water Heating and House Heating.

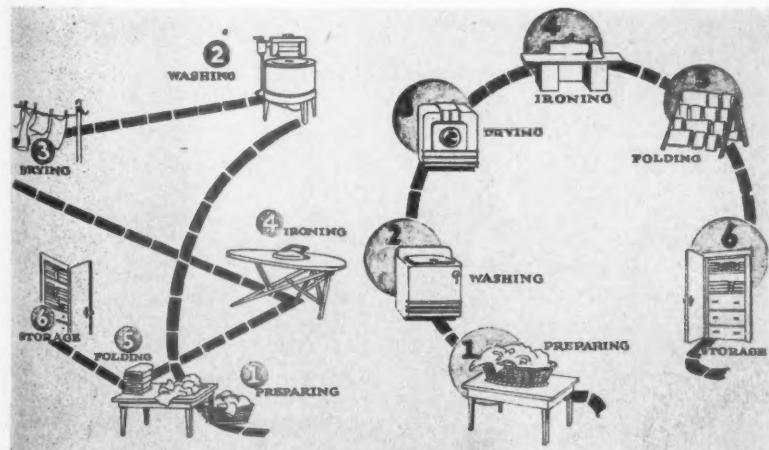


Chart 4

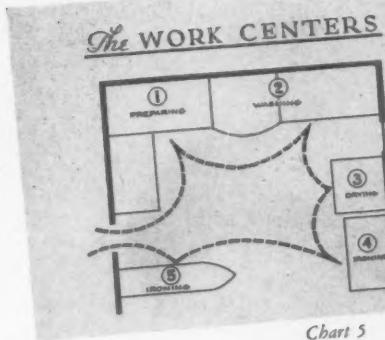


Chart 5

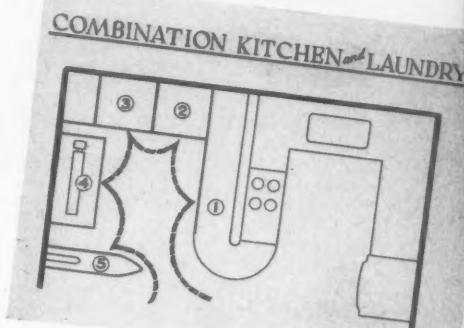


Chart 6

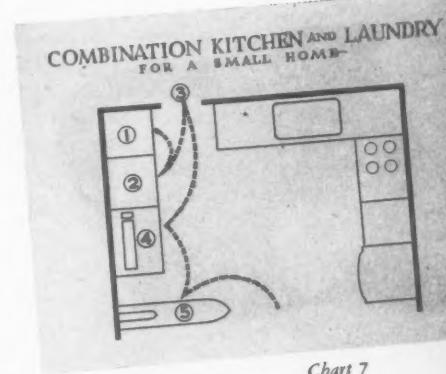


Chart 7



Chart 8



Forestalling Heating Headaches

Conversion burner school for dealers seen as answer to new gas heating demands and outmoded merchandising methods

BY JOHN W. FRAZIER

Supervisor, Dealer Relations, Equitable Gas Company, Pittsburgh, Pa.

SOARING competitive fuel prices, a local smoke abatement campaign and the general demand for more convenient living have created an unprecedented, undreamed-of demand for gas heating equipment, especially conversion burners, in the Pittsburgh district. This great demand, while potentially adding substantially to the gas companies' heating load, is accompanied by a real threat of serious trouble to the gas utility.

The desire of home owners to heat with gas has changed the whole picture of the manufacture and sales of gas conversion burners as it existed at the time of the war-necessitated freeze of gas heating in 1942. The great backlog of customers built up during the war years has made the previous method of merchandising conversion burners unuseable.

In Pittsburgh the sale of gas burners was pioneered by the gas companies, and the first big campaign was launched in 1928. At that time there were only four or five completely automatic burners listed by A. G. A. In the years between 1928 and 1942 the Equitable Gas Company, one of the three companies

serving the Pittsburgh district, sold about 5000 conversion burners. During these fourteen years repeated efforts were made to get heating contractors to sell conversion burners along with other types of heating equipment, but all efforts failed.

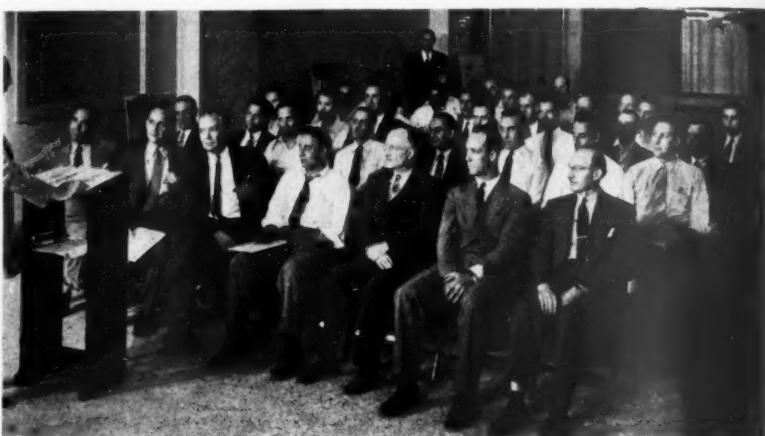
The first result of the new demand for conversion burners was in the manufacturing field. When the curtailment program went into effect in 1942 there were less than ten conversion burners listed by the American Gas Association. By July 1 of this year there were more than forty burners listed, plus a few unlisted burners that were on the market.

The second major result has been the dealer reaction to the intense demand for conversion burners. With gas fast assuming the foremost position in the heating field, the contractors were forced to sell gas equipment if they were to retain their sales volume. The first dealer advertisement for conversion burners was carried in the Pittsburgh newspapers' classified columns in January,

and sale of conversion burners has put the gas companies on the spot. While they now have little control over the selection or installation of a burner, any trouble that is caused by the equipment or the installation is quite apt to be blamed on the fuel itself, and the gas companies will be the first ones called for service work.

Thus it becomes a matter of major concern to us to forestall as much trouble as possible by preventive measures, so that the entire field of gas heating can be protected and a service demand which could not possibly be filled can be avoided.

Realizing the importance of this matter, the Equitable Gas Company of Pittsburgh conducted a Conversion Burner School for Dealers from July 22 to August 2. While this school was primarily designed to train dealers to avoid mistakes which might be costly to the company, it also offered opportunity for the company to demonstrate again its desire to cooperate with dealers and to further



School gets under way with a preliminary talk by Henry C. Givan, Jr., sales promotion manager. Standing in the background is General Sales Manager Ray Little. More than 500 people attended the 10 sessions of the school

1946. This advertising has now risen to the half-page level. While there was not even one dealer selling burners in 1942, there are now more than 100.

The dealers are new in the business and the majority of the equipment they originally sold was neither completely automatic nor tested by A. G. A. The local gas companies carried on a campaign of advertised warnings and have practically eliminated the sale of unlisted equipment.

This expansion of the manufacture

this part of the general sales promotion program.

Prepared and conducted under the sponsorship of the Dealer Relations Section, the school consisted of two courses, each course being repeated nightly for a week. All dealers operating on the lines of the Equitable Gas Company were invited and the attendance for the ten sessions was about 500.

The first week of the school was devoted to the selling and sizing of conversion burners. The supervisor of the com-

pany's Utilization Engineering Section was in charge of the instruction, assisted by three of his engineers. Using floor plans of a typical two-story house, the instructors demonstrated the manner in which heat losses, burner sizes, and fuel consumption estimates are computed. For each of these calculations all types of building construction and heating systems were considered separately. Tables computed by Equitable Gas Company heating engineers showing seasonal gas consumption for homes of representative sizes, the radiation capacity of every type of radiator and heat loss factors for all types of construction were given to those attending the meetings.

Meetings during the second week gave complete consideration to installation and service details. Local ordinances, A. G. A. standards, manufacturers' recommendations as well as Equitable Gas Company's policies were clearly and fully explained. Every attempt was made to solve the individual problems raised by dealers. The instruction for this series was handled by the appliance service foreman and an inspection engineer.

At the close of each meeting a question period was held, with the Dealer Relations Section supervisor acting as moderator and the evening's speakers



Promotional material, such as this window display, was exhibited at the school to give dealers sales ideas and to dress up the class room. The window displays were loaned to dealers for their use after the school was over

composing the board of experts. The response to the invitation for questions was unexpectedly large. Installation details were the major topic, although many questions about company policy

and gas supply were asked. All questions were answered fully and frankly. The principal questions in order of their frequency were:

Will the gas company have enough gas to supply the anticipated demand?

Which A. G. A.-listed burners do we recommend?

How do you determine proper gas line size?

Are limit controls necessary on all jobs? Can we furnish heat loss data sheets of the type we use?

Why are cast iron bushings and fittings on gas lines not recommended?

Will we inspect dealer installations and advise if work is done right?

Should fire brick linings be removed when installing a burner?

Does the gas company recommend down draft diverters on burner jobs?

Will a circulator on a boiler lower the fuel consumption?

Does fan on gravity system lower fuel consumption?

Do we recommend installing a burner in a down draft furnace?

Will we help the dealer figure heat loss?

Does the gas company test burners?

Where should pilot line be taken off?

What makes a conversion burner "whistle"?



With the question period in full swing, Engineer John Sherrer answers a dealer's question. Looking on are Engineer Tom Ewing (seated) and moderator John Frazier, dealer relations supervisor. At the end of each class questions were invited and answered by the instructors

Is flame impingement in the furnace good or bad?

Why does the gas company recommend wiring high limit control in high voltage circuit only?

Why won't city building code permit "Romex" wire when "BX" is obtainable?

Why does the gas company sell burners? Is a luminous flame burner as efficient as a blue flame burner?

How much is saved by lowering night thermostat settings?

Will we permit dealer to learn by observing our servicemen install burners?

Does the gas company recommend power burners?

What is dealer's liability following a possibly hazardous installation?

What policing power does the gas company have?

Each session was opened with a welcoming and preliminary talk by a department head or by the general sales manager. These talks presented the overall picture of the gas heating field and pointed out the general problems facing both the dealers and the company. The speakers stressed the fact that while the company in a limited sense was a competitor of the dealer it was greatly interested in his welfare and desired to help him in any way it could.

The school was very successful. The large attendance and great degree of interest shown by the dealers coupled with the many unsolicited comments praising the school indicate that it was a profitable undertaking. Ninety per cent of those attending requested further meetings, to permit greater coverage of the subject matter and more details.

The school was held in a sales room of the Equitable Gas Company. Window displays promoting the sale of conversion burners were exhibited and large photographs of typical installations and manufacturers' literature were displayed prominently. The window displays are now being circulated among dealers to aid them in their sales campaigns.

Engine Production

PRODUCTION of 98 engines with a total capacity of more than 110,000 horsepower for pipeline use is under way in the two plants of The Cooper-Bessemer Corp., following the receipt of orders from five pipeline companies, Stanley E. Johnson, general sales manager, announced recently.

Natural Gas Flows To Nashville

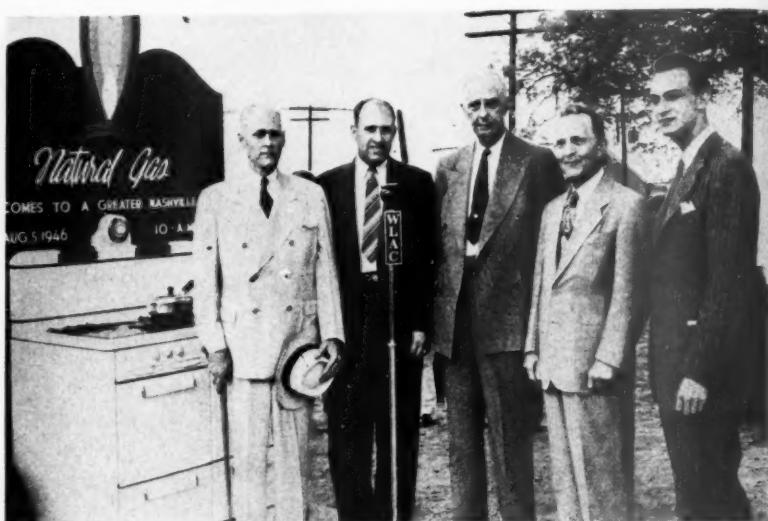
ON August 5, at the district regulator station in Nashville, Tenn., the city's Mayor, Hon. Thomas L. Cummings, turned the wheel of the golden valve, which permitted the first natural gas to flow into the mains of Nashville Gas and Heating Company. Hon. Litton Hickman, Judge, Davidson County, turned the valve lighting the burner on the first range to use natural gas in Nashville.

The ceremonies were broadcast over radio station W.L.A.C., and Mayor Cummings and Judge Hickman joined in a heated (with gas)

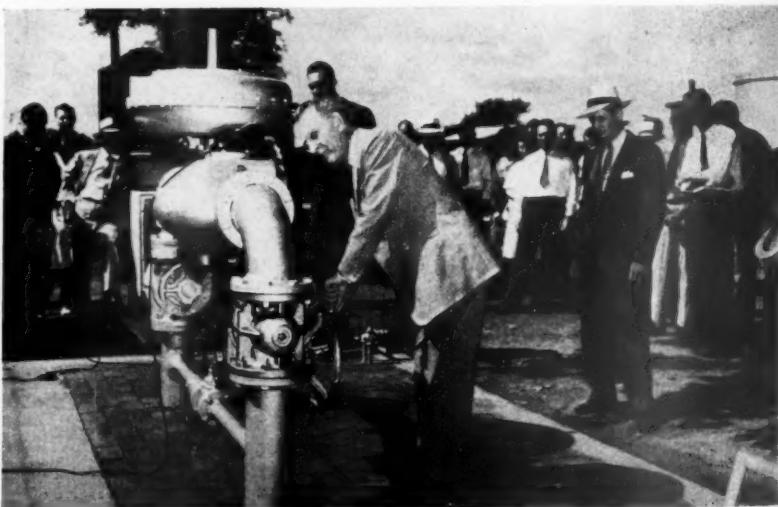
contest to see who could fry an egg in the shortest length of time. City Commissioner J. W. Bauman, timekeeper, declared a tie.

Immediately following the ceremonies a crew of 70 men under supervision of Conversions and Surveys, Inc., began the conversion of customers' appliances, adapting them to the use of natural gas. For this purpose, the city was divided into seven sections.

Natural gas was brought to the Nashville area by Tennessee Gas and Transmission Co., from Corpus Christi, Texas, a distance of approximately 1,000 miles.



Left to right: Wade Thompson, President, Tennessee Natural Gas Lines, Inc.; W. H. Ligon, President, Nashville Gas and Heating Co.; Judge Litton Hickman; Hon. Thomas L. Cummings, Mayor of Nashville; and Mr. Laub, announcer, W.L.A.C.



Mayor Thomas L. Cummings turning the valve to let the first natural gas flow into Nashville

Proportioning Purifier Air

A reliable, economical method of automatic proportioning suitable for installation in a water-gas plant using either the rotary-type or centrifugal exhauster

HERE iron oxide is used to remove the sulphur content of manufactured gas, the introduction of oxygen into the gas stream being purified increases the sulphur-removing capacity of the iron oxide sponge and its life in service. The accurate proportioning of this oxygen is important. Too much will act as a too great a diluent, a great excess will form explosive mixtures and too little will be ineffective and the oxide will foul more rapidly than with proper control, resulting in high operating expense for oxide handling.

In plants where rotary positive displacement exhausters are used the ratio of air and gas is usually controlled by belting to the exhauster a positive displacement air blower. Where centrif-

BY D. L. DOWLING

Manager, New York District,
Roots-Connersville Blower Corp.

ugal exhausters are used, since the speed bears no definite relation to the gas flow, similar means cannot be used.

This paper will describe an automatic proportioning arrangement recently installed in the water-gas plant of the Elizabethtown Consolidated Gas Co., Elizabeth, N. J., that can be used with either type of exhauster. Before proceeding with the description of this arrangement, let's consider what happens in a purifier box, and why air should be admitted with the gas in controlled ratio.

Although the chemical reactions

which take place in an iron oxide gas purifier box are quite complex, the basic reaction is $\text{Fe}_2\text{O}_3 + 3\text{H}_2\text{S} \rightarrow \text{Fe}_2\text{S}_3 + 3\text{H}_2\text{O}$. At the same time, a sufficient quantity of oxygen in the gas admitted in the presence of the partly-fouled oxide will lead to the catalytic reaction $2\text{H}_2\text{S} + \text{O}_2 \rightarrow 2\text{H}_2\text{O} + 2\text{S}$. Thus, introduction of oxygen into the gas being purified increases the effective capacity of the box. This oxygen is usually called revivification oxygen and the air that introduces it, revivification air, and the blower, revivifying blower.

According to Gilbert E. Seil in "Dry Box Purification of Gas," published by the American Gas Association, an oxygen content of 0.4% or less is ineffective in removing sulphur and for each 1/10% of oxygen above this percent-

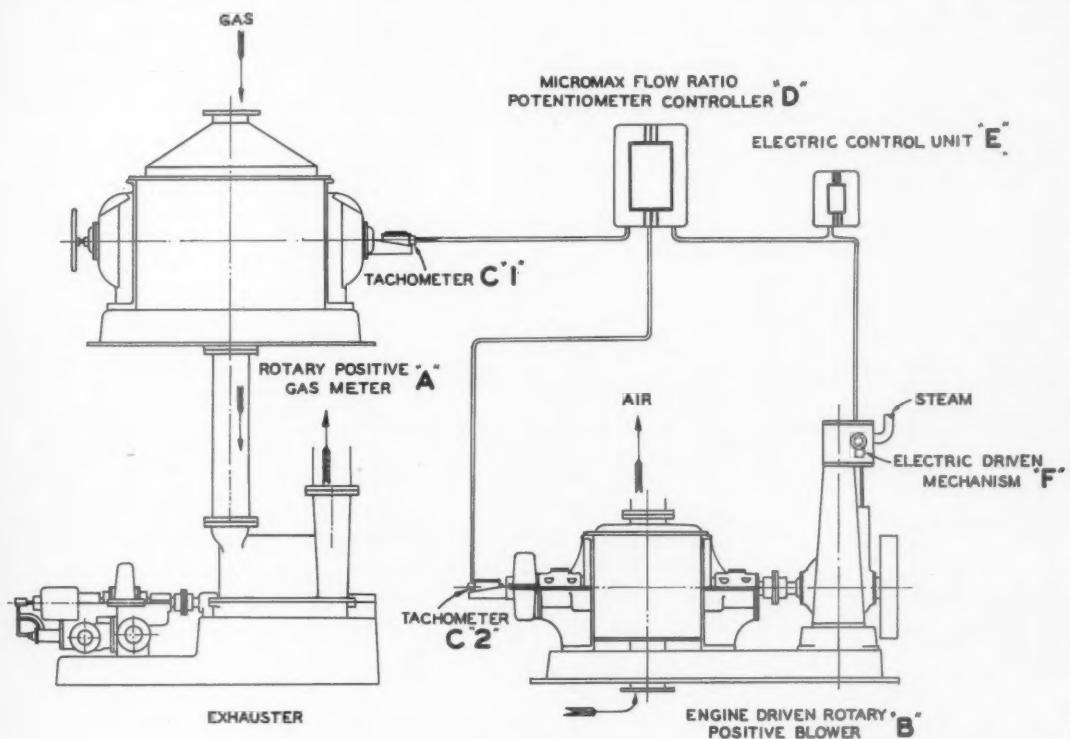


FIGURE I

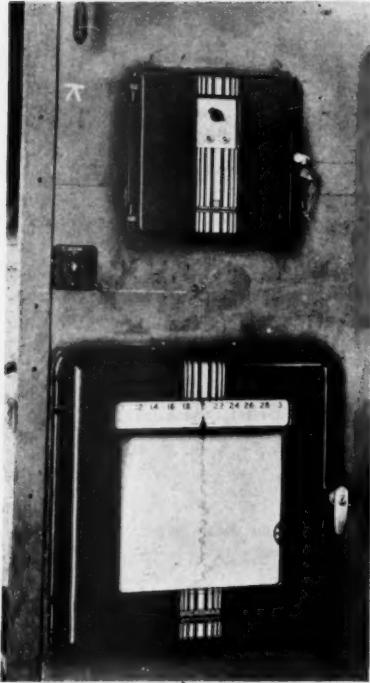


Figure 2



Fig. 3. Close-up of manual setter on M.E.C. relay unit

Fig. 4. Valve drive mechanism completely assembled

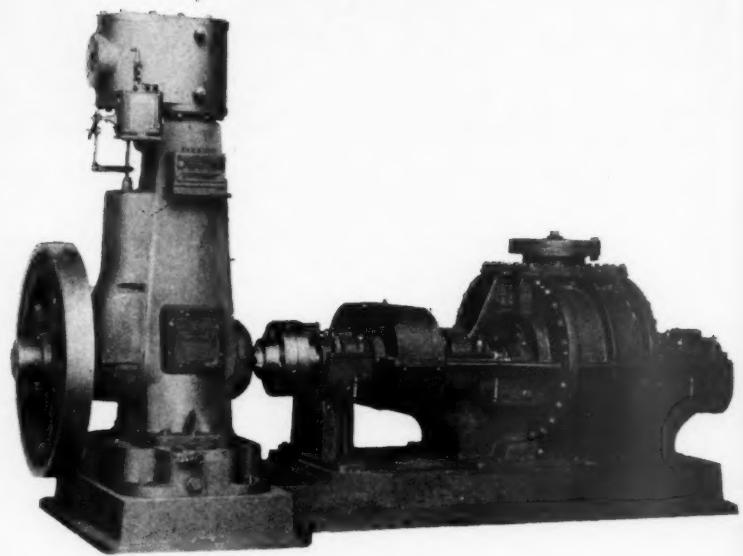


Fig. 5. Engine-driven revivifying blower

age, if the oxide is partly fouled, 125 grains of hydrogen sulphide per 100 cu.ft. of gas will be removed. He states that if a gas containing 400 grains of hydrogen sulphide and 0.6% of oxygen is passed through a purifier box partly fouled, oxygen will react catalytically with 250 grains of H_2S leaving only 150 grains for the sponge to absorb. The oxide sponge can be maintained in service until it contains 35% of free sulphur. It then requires replacement. If insufficient air has been admitted during service, it may be low in sulphur and high in Fe_2S_3 , and can be revivified by being removed from the box and exposed to the atmosphere by turning with shovels, or by circulating air enriched gas through a blanked off box (revivification in situ). $2FeS_3 + 3O_2 \rightarrow 2Fe_2O_3 + 6S$.

It is usual to operate with higher percentages of oxygen than 0.4%. There is a certain amount of oxygen in the gas that comes from leakage on oven gas and from the blow-run on water-gas, and to supplement this it is customary to introduce an additional 2% of air, which is equivalent to approximately an additional 0.4% of oxygen. The exit gas from the box usually contains 0.6 to 0.8% oxygen.

As stated, where rotary positive exhausters are used, the revivifying blower is generally of the same type,

with chain drive or belt operating from the exhauster and maintaining an approximately constant air-to-gas ratio. In plants equipped with centrifugal exhausters, the operation has been somewhat haphazard. In some plants, the centrifugal exhauster has operated slightly throttled on the inlet and has sucked air in. This cannot be relied on for accurate ratio and it is also an unnecessary power charge on the driver of the exhauster. Variable speed rotary positive blowers have also been used in plants served with centrifugal exhausters, and their speed controlled manually by reading instruments or by chemical analysis.

The automatic system here described can be applied to plants equipped with either rotary positive or centrifugal exhausters.

It consists of the following elements arranged as shown in Fig. 1:

- A—A Connersville meter measuring the gas make (usually already installed). (Fig. 6)
- B—A variable speed rotary positive air blower. (Fig. 5)
- C—Electric magnetos (tachometers), on meter (1) (Fig. 7) and blower (2).
- D—A Leeds & Northrup Micromax flow ratio indicating and recording potentiometer type controller. (Fig. 2)

E—A Leeds & Northrup Micromax electric control unit. (Fig. 2 top)

F—A Leeds & Northrup electric drive mechanism speed positioner such as a steam valve to a variable speed steam engine or turbine, or a lever controlling a Reeves type drive. (Fig. 4)

The method of operation is quite simple. The voltages from the tachometers on the meter and on the blower are opposed and balanced in the ratio controller (D) to maintain any desired tachometer ratio, which with the positive meter and positive blower provides a constant air-to-gas ratio.

As the Connersville Meter (A) changes speed with increased or decreased gas flow, the meter tachometer (C1) feeds a higher or lower voltage to the Micromax potentiometer (D). This unbalances the voltage comparison between the set voltage of the controller and the tachometer output.

This voltage unbalance actuates the Micromax electric control unit (E) which actuates movement of the electric drive mechanism (F) until it has repositioned the steam valve to afford an engine and blower speed that will drive the blower tachometer at proper speed to restore the original voltage comparison. Then the speed of the meter and blower will be in the same ratio as originally called for by the setting, and the originally desired percentage of purifier air will be supplied.

The Micromax recording controller "D" is equipped with a 30-day strip chart reading 1%, 2%, 3% air, and

any air-to-gas ratio within these limits can be maintained by the controller by adjusting the control setter knob within the case. If wider limits were desired, these could also be supplied. Figure 2 shows the Micromax controller (D) at the bottom with a typical chart and the electric control unit (E) at the top. The manual setter which is shown as part of the electric control unit is shown more specifically in Figure 3. The position of the manual setter knob indicates the degree of opening of the controlled valve and the corresponding speed of the air blower, and the apparatus can be thrown off "automatic" and the blower controlled manually if desired. Figure 4 shows the drive mechanism and valve (F). Figure 5 shows the engine driven revivifying blower (B). Figure 6 the gas meter (A), and Figure 7 the tachometer with drive (C1) on the gas meter. Safety provisions are supplied so that it will be impossible to operate the air blower with the gas exhauster shut down.

Acknowledgment is made of the assistance of H. L. Scutt of Leeds & Northrup Co., and of John Crilly of the Elizabethtown Consolidated Gas Co., Elizabeth, N. J., where the first installation was made, and is operating satisfactorily. A second system has been delivered to the Long Island Lighting Co., Bayshore, L. I., but has not yet been put in service.

The system at Elizabeth has been functioning with 100% reliability, requiring no manual attention, and no maintenance.

The Gas Industry in Russia

UNDER the title of the "Law on the Five-Year Plan for the Rehabilitation and National Development of the U.S.S.R., 1946-50," the Soviet Embassy in London has lately issued an English translation of the outlines of the great industrial development that has been planned for each and every one of the different republics embraced in the Soviet Union during the next five years.

The gas industry is among those that are specified to receive a huge expansion, and it would appear that special attention is to be devoted to the development of the natural gas resources of the country and to the manufacture of gas from shale, and that for this purpose shale mines with a capacity of 3,000,000 tons in the Leningrad region and of 9,400,000 tons in Estonia are to be rehabilitated or newly built.

A new branch of industry is to be started

on a large scale on the basis of exploiting natural gas and the processing of coal, peat and shale. It is stated that by 1950 the output of gas from coal and shale is to be increased to a yearly total of no less than 67,000,000,000 cu.ft. and that of natural gas to the huge aggregate of 296,520,000,000 cu.ft. Moreover, the work of carbonising coal underground at the mines is to be continued and extended to yield an annual output of 32,476,000,000 cu.ft. by 1950.

During the five-year period shale gas and other processing plants are to be constructed in the Estonian and Leningrad areas; four new gasworks built, the natural gas pipe line between Saratov and Moscow is to be completed and new pipe lines laid between Kohtla-Jarva and Leningrad and Dashava and Kiev. Two plants for the hydration of

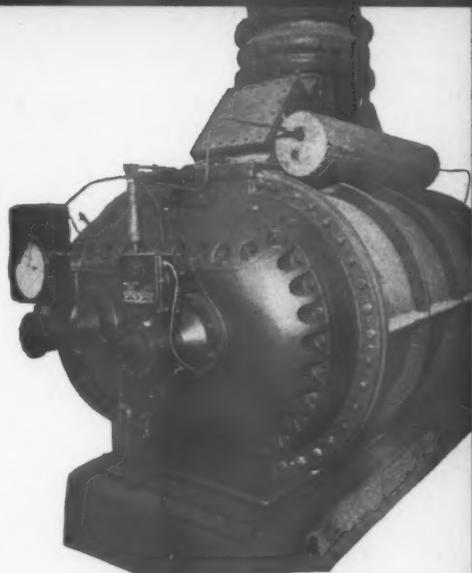


Fig. 6. The gas meter

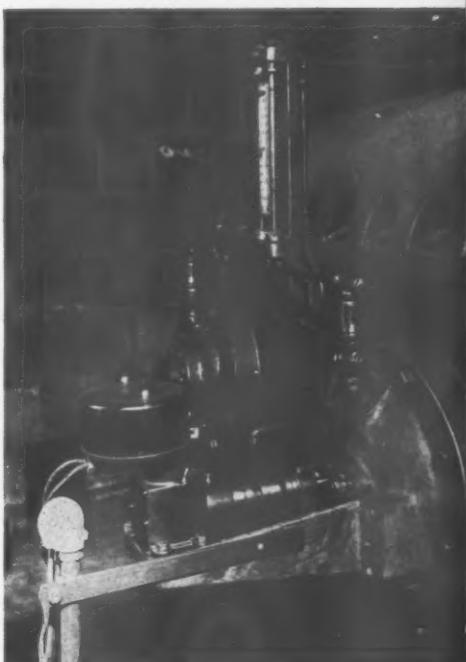
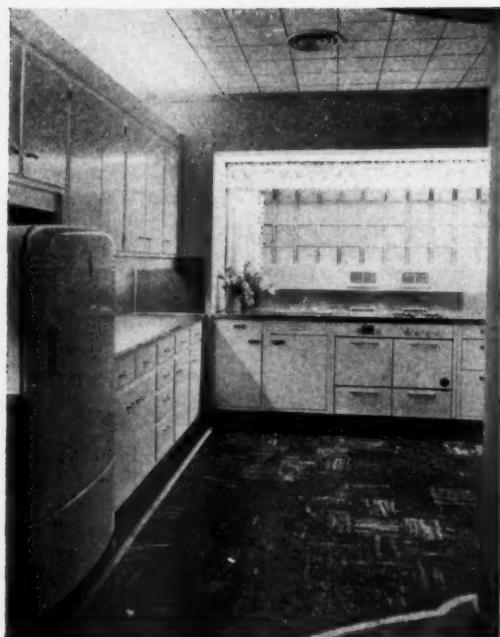


Fig. 7. Tachometer with drive

coal and one for the production of synthetic petrol are also to be constructed.

In addition, according to the *Soviet News* issued by the press department of the Embassy, three large new gasworks are to be constructed in Leningrad to make gas from shale obtained from the Estonian republic. The supply of gas is also to be extended to many new towns. Moscow is to get a supply from the Saratov natural gas pipe line. Supplies of natural gas are also to be tapped near Kuibyshev, Stavropol, Makahachkala, and other towns.—London *Gas Times*, Aug. 17, 1946



The House of the Blue Flame

To coordinate gas appliance sales, and to increase demand for appliances that create bigger gas loads, the Atlanta Gas Light Co. has placed a model gas appliance-operated home, The House of the Blue Flame, on its street floor.

Objectives and features of the model home are promoted heavily in the utility's advertising. A recent seven-column ad in the Atlanta Journal calls this model home "tomorrow's house today . . . air-conditioned by gas . . . conveniently located on the main floor of the gas company. Drop in any time at your convenience—rest and relax—and see the single gas unit that supplies clean, fresh, conditioned air the year around."

The utility is featuring two New Freedom gas kitchens in the model home, and newspaper copy capitalizes their advantages and says: "You'll want to visit the 'House of the Blue Flame.' It points the way to the kind of comfortable living gas is going to make possible in the postwar era which has suddenly become today."



Laboratories' Operations Mount

Return to peacetime economy brings 10 per cent increase in total appliance testing and gas research activities

CONCLUDING the first full year of complete return to all regular services to the gas industry, American Gas Association Testing Laboratories operations have reached a normal prewar level for the first time in five years.

While the rate of return to a peacetime economy did not reach a normal prewar level until about mid-year, overall operations in terms of revenue increased approximately 10 per cent over last year. This was mainly for the reason that rising appliance testing and research activities more than offset completion of war work. The effect was one of cushioning the transition which otherwise might have proven costly.

Occurring in a period of rapidly rising costs as well as attendant labor, material and personnel problems, it made possible adequate attention to the resumption of normal operations as well as planning for an expected greatly increased demand upon the services and facilities of the Laboratories. As indicated by the accompanying chart, it is interesting to note that for the 1943-46 period inclusive, war activities constituted 52 percent of all Laboratories' operations while testing and inspection combined accounted for 20 percent and research 28 percent.

Greatest gain in the resumption of regularly scheduled operations quite naturally took place in the testing of gas appliances. Research activities for the year as well as for the entire war period were well above prewar levels, with each successive year showing modest gains. Percentagewise testing operations increased 220 percent over last year, inspection activities approximately 15 per-

cent and research more than 30 percent.

Testing operations strongly reflected the postwar trend to gas house heating, central heating equipment accounting for nearly 40 percent of the total. This trend was further emphasized in that testing of conversion burners, space heaters and ranges ranked next in importance, each accounting for 12½ percent. The year also brought a large increase in the number of manufacturers submitting appliances for approval. Many companies' equipment were presented for approval tests for the first time while others, formerly specializing in one type of equipment, have introduced new lines. New manufacturers are principally confined to the conversion burner and accessories fields.

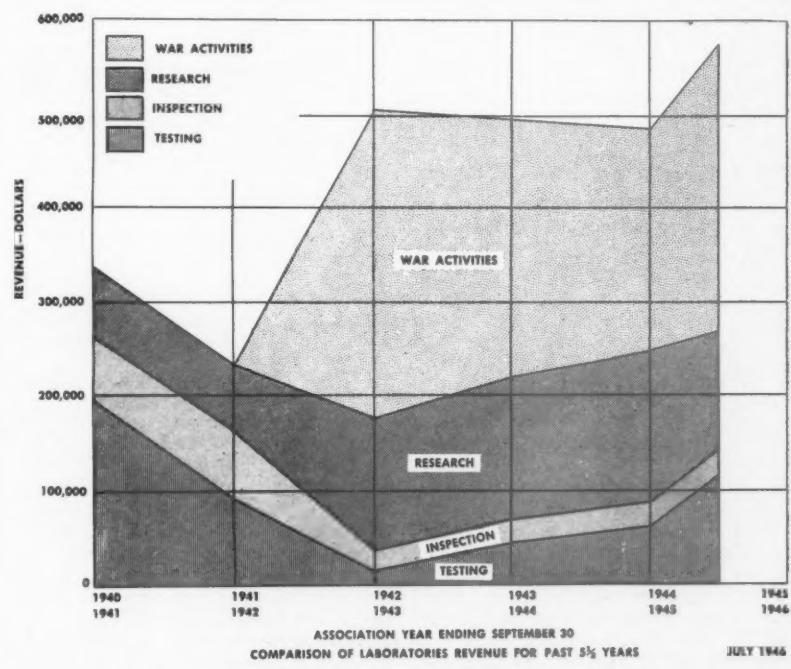
While inspection of appliances in the field for extension of certification and compliance with requirements was on an increasing basis for the year, the number and extent of inspections were still considerably below prewar levels. Reconversion difficulties, marked reduction in the number of models, and wide variations in the rate of resumption of production were principally responsible as was the fact that inspections of newly approved equipment do not start until a year after certification.

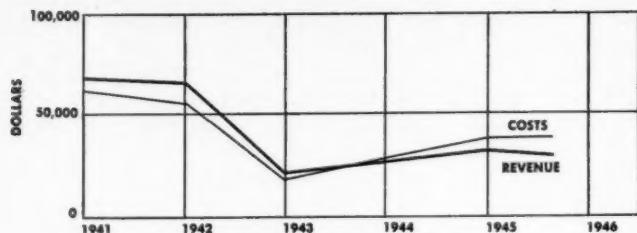
Research endeavors, carried out on a full scale for the entire year and which

are financed by the American Gas Association General Fund, were closely integrated with the Association's accelerated special research program and the needs of the gas industry. Studies relating to the advancement of appliance design are being undertaken at an ascending pace. Four domestic gas research bulletins and one mixed gas bulletin were published. Ten additional domestic investigations and one dealing with commercial and industrial gas applications were completed and reported to committee with seven other domestic gas research projects which are in progress.

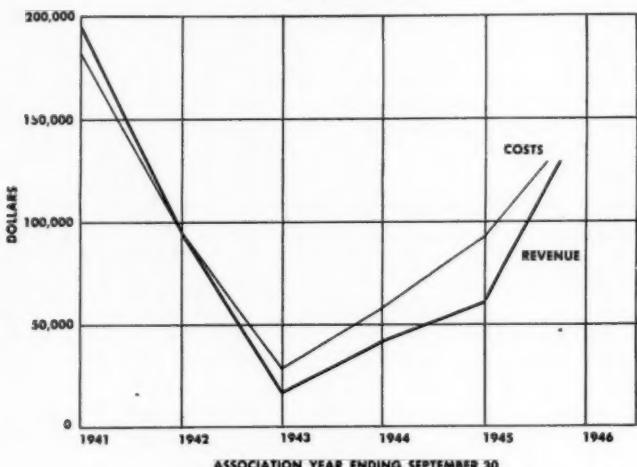
General activities other than regular testing, inspection and research functions of the Laboratories increased proportionately to the rising level of business experienced during the year.

A sharp rise in services rendered member companies, such as preparation and provision of technical data on special phases of gas production and distribution and council on problems dealing with appliance design, installation and utilization took place. Many contacts and exchanges of information with other technical organizations such as American Society of Heating and Ventilating Engineers, American Standards Association and American Society for Testing Materials likewise were re-





ASSOCIATION YEAR ENDING SEPTEMBER 30
COMPARISON OF REVENUE AND COSTS FOR INSPECTION
FOR PAST 5½ YEARS



ASSOCIATION YEAR ENDING SEPTEMBER 30
COMPARISON OF REVENUE AND COSTS FOR TESTING
FOR PAST 5½ YEARS

newed.

Consumer interest was reflected in the resumption of requests from individuals and educators for information on organization and operation of the Laboratories and its services. Visitors increased greatly and again included many from other parts of the world. Engineers and utility executives from England, Russia and Australia were among the visitors,

some staying several weeks to make a technical study of testing and research techniques.

Despite rising costs and unsettled economic conditions, it is estimated that on a basis of gas appliance production equalling prewar levels, the ultimate cost of the approval plan to consumers still remains less than five cents per appliance.

Utility Radio Service Established

THE Federal Communications Commission has established a radio communication service for utilities by announcing proposed rules and regulations authorizing classes of stations after September 9.

For two and one-half years the gas industry has been represented on Committee 4, Panel 13 of the Radio Technical Planning Board by W. T. Bulla of the Natural Gas Pipeline Company of America. That committee has been instrumental in giving advice and counsel in the establishment of the regulations and much credit is due it.

Up to now gas utilities have been re-

stricted in their use of radio to emergencies, public safety or protection of important property. Mobile stations can now be employed for issuing orders on production, transmission and distribution.

Gas utilities now using radio service should receive a copy of the regulation from the Commission.

The issuance of these new rules has become a reality after many months of negotiations carried on between the representatives of the utilities and members of the FCC. It has been no small task and the gas companies have and will benefit as a result

of splendid cooperation by the representatives of various gas, electric and water companies who have pooled their efforts in an endeavor to secure workable rules and regulations in order that radio communication might be utilized to carry on the essential and necessary communications of the utilities operating in continental United States.

There are other matters to be worked out which will require not just the continued cooperation of those who have taken part in the past but a more general contribution on the part of those now using or who expect to use radio in their business.

Texas-California Gas Line Underway

CONTRACT for installation of the California portion of the Texas-California natural gas pipeline was awarded by Southern California and Southern Counties Gas Companies to H. C. Price Co. This construction involves an expenditure of approximately \$3,750,000.

The contract calls for the installation of 214 miles of 30-inch high pressure natural gas transmission line between Blythe and Santa Fe Springs, the largest high pressure pipeline of its kind in the history of the natural gas industry. H. C. Price Co., a California corporation with offices in Los Angeles, San Francisco and Bartlesville, Oklahoma, participated in the building of both the Big Inch and Big Little Inch oil lines constructed during the war from Texas to the Eastern Seaboard.

Mr. Price stated that preliminary work will be started early in October and actual construction will be under way by the first of the year. The line is scheduled for completion in seven months after actual construction is started.

It is estimated that upwards of a thousand men will be engaged in the field construction, most of whom will be recruited from local sources.

The sixty thousand tons of pipe required for this portion of the line is now being fabricated in Los Angeles by Consolidated Steel Corp. Ltd.



H. C. Price, construction contractor, and F. S. Wade, president, Southern California and Southern Counties Gas Companies, sign contract for installation of California portion of pipeline

Development of Windowed Cell

Natural gas well study by the U. S. Bureau of Mines leads to construction of special equipment for observing hydrocarbon phases under variable pressures¹

THE windowed cell was constructed by the Bureau of Mines for determining little-known properties of gas-condensate fluids. Information regarding these properties is needed to supplement the experimental data that have been obtained in the studies of natural-gas wells carried on by the Bureau in cooperation with the American Gas Association. The cell was designed for operation in the range of low temperatures characteristic of the critical state of natural hydrocarbon mixtures, but because of the versatility made possible by the windows it can be used for work which previously has required a number of pieces of specialized equipment.

The early work on the properties of gas-condensate systems was done with the equilibrium cell (1),⁷ an apparatus constructed in 1939 for laboratory investigations. This apparatus used by the Bureau of Mines for determining the specific volumes and phase boundary properties of natural hydrocarbon mixtures (2), was designed to measure the total volume of the sample rather than the separate volumes of the gas and liquid phases in equilibrium. The volume of the liquid phase could be measured only when there was no gas phase present as, for example, at the bubble points of the mixture and at pressures greater than those of the bubble points (2, Fig. 1). If the compositions of the phases in equilibrium were sufficiently dissimilar, a thermocouple mounted under the head of the cell permitted detection of liquid in the fluid at pressures lower than those of the dew points and bubble points.

A different method was used for

BY C. K. EILERTS,² V. L. BARR,³
H. C. HAMONTRE,⁴ F. BOBROW-
SKI,⁵ AND B. N. MULLENS⁶

measuring single-phase boundary pressures. The dew-point pressures of hydrocarbon systems containing up to 73.59 mass percent of separator gas (2, Fig. 12 and 13) were determined from compressibility concepts of data obtained with the cell, but the volumes of liquid that accumulated as pressures were lowered could not be measured. The equilibrium cell was designed primarily for the evaluation of compressibility factors, and for that purpose it was used at pressures up to 5,000 lb. per sq. in. and at temperatures ranging from 25 to 280° F.

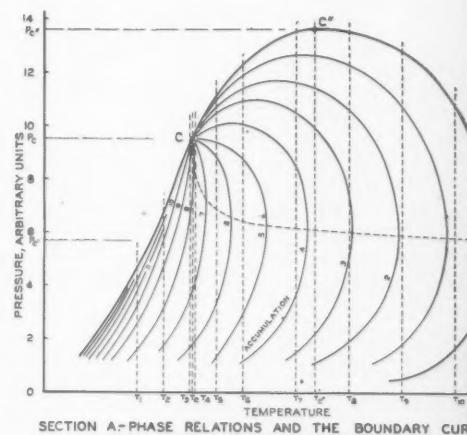
Portable Equipment Use

In 1943 portable equipment (3) was constructed and used in gas-condensate fields to determine the relative volumes and compositions at equilibrium of the liquid and gas phases of fluid produced by wells. The investigations by the Bureau covered the complete range of pressures and temperatures to which fluids are subjected in flowing from reservoirs to wellheads and through surface equipment to tank storage. The principal use of the portable equipment was to measure liquid volumes by dynamic methods at temperatures of 70 to 280° F. and at pressures up to 5,800 lb. per sq. in. The cricondenbar pressure, the maximum pressure at which the gas and liquid phases of a given fluid may coexist in equilibrium, was measured for each fluid tested. The cricondentherm temperature, the maximum temperature at which the gas and liquid phases of a given fluid may coexist in equilibrium, was usually greater than 280° F. and could not be measured directly; values have been determined by extrapolation, however, that are satisfactory for many purposes.

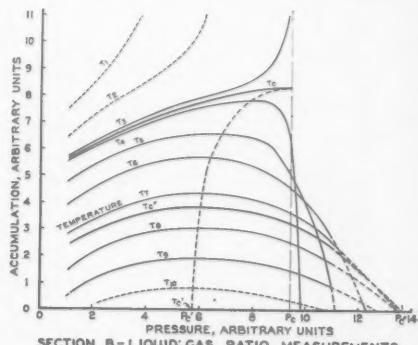
Volumetric liquid:gas ratios at tem-

peratures below 70° F. could not be determined with the portable equipment because of the difficulty of conducting tests involving the flow of fluids that contained frozen hydrates. The critical pressure and the critical temperature, the pressure and temperature at which the gas and liquid phases in equilibrium are identical in properties, therefore could not be measured because the critical temperatures of the fluids tested were below 70° F.

Critical pressure and temperature data for mixtures tested in the field and in the laboratory are needed for correlation purposes. Cope, Lewis and Weber (4), and Brown, Souders and Smith



SECTION A—PHASE RELATIONS AND THE BOUNDARY CURVES



SECTION B—LIQUID:GAS RATIO MEASUREMENTS.

Fig. 1. Evaluation of critical constants from liquid:gas ratio measurements

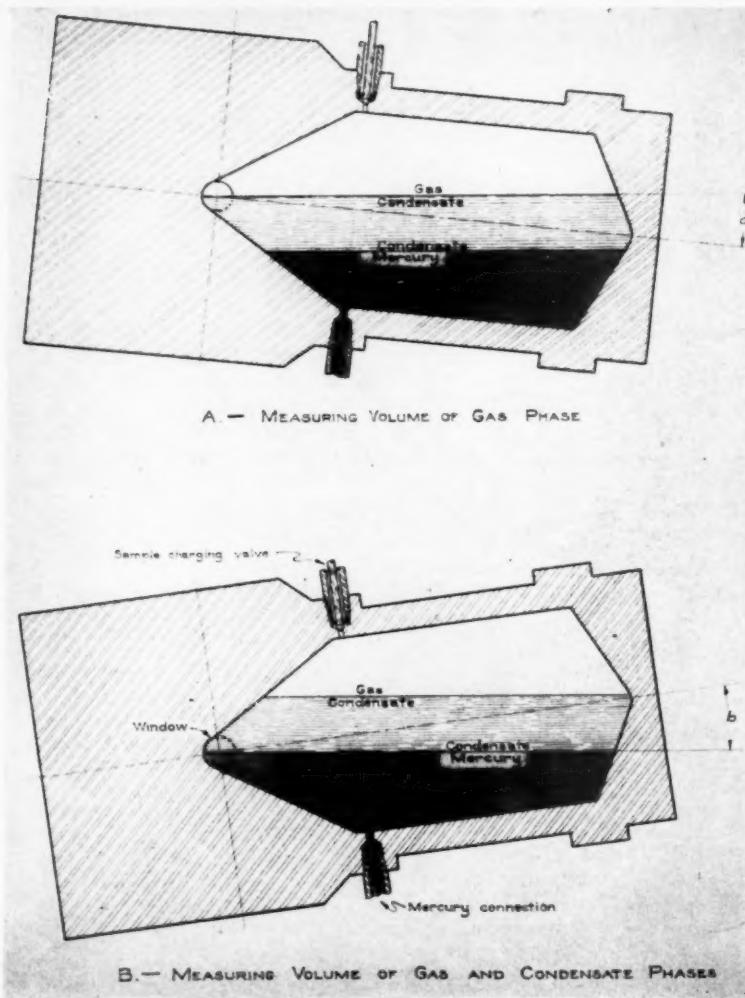


Fig. 2. Use of windowed cell for measuring volumes of the fluid phases in equilibrium

(5) have shown how critical pressures and temperatures may be used in correlating pressure-volume-temperature relations of paraffin hydrocarbons. Kay (6) introduced the concept of the "pseudocritical point" and applied it in estimating the compressibility factors of hydrocarbon mixtures. Sage and Lacey (7, p. 94, Fig. 55) have shown that critical pressures of hydrocarbon mixtures exceed the critical pressures of the components and that the greater the divergence of the critical temperatures of the components the higher the critical pressure of the mixture. For natural hydrocarbon mixtures, the value of the pressure and the value of the temperature common to both the critical and the cricondenbar loci may be significant for

correlation purposes. This is shown by a phase-boundary surface configuration (2, Fig. 16A) of mixtures of separator gas and liquid determined with the equilibrium cell.

Figure 1 is an illustration reproduced from a discussion by Eilerts of a paper by Reid (8). The illustration was used to show how the critical constants of natural hydrocarbon mixtures may be determined from liquid:gas ratio measurements. Section A of Figure 1 is the phase diagram for a hypothetical gas-condensate fluid. It was developed from the curves of section B, which is a representation of experimentally determined liquid:gas ratios. The points C, C' and C'' on the phase-boundary curve (section A) represent the pressures and

temperatures of the critical, the cricondenbar and the cricondenterm respectively. The curves of section B, Figure 1, for temperatures greater than T_4 are similar to the curves fitted to data obtained in the field with the portable equipment (3, Fig. 8).

Because of difficulties experienced with solid hydrates formed at low temperatures it is not possible, with portable equipment requiring continuous flow of fluid, to measure liquid:gas ratios at temperatures less than T_4 . Laboratory and field experience indicates that unless natural hydrocarbon mixtures contain more than 4 gal. of butanes and heavier components per M cu.ft. of gas the critical temperature T_c cannot be determined in the field by dynamic methods. The freezing of hydrates does not prevent the use of laboratory equipment and static methods at low temperatures because there are no flow-control valves to be obstructed by an accumulation of solid hydrates. It is necessary only that means be provided in the laboratory equipment for distinguishing the gas and liquid phases at pressures and temperatures approximating the critical pressure and temperature of the mixture under test. A system of windows permitting safe observation of the coexisting phases in equilibrium and of the meniscus between them is probably the most dependable way of identifying the phenomena characteristic of the critical state.

On the basis of these concepts and needs the windowed cell was designed to provide liquid:gas ratio and phase-boundary data at temperatures below 70° F. and also at higher temperatures in the range of operation of the portable field equipment. Provision was made also for determining the compressibility factors of the fluid samples; a measurement previously possible only with the equilibrium cell.

Essential Features of the Windowed Cell

The essential features and the operating principle of the windowed cell are illustrated in Figure 2. The space inside the cell where the sample is confined has a maximum volume of 833 cc. Diametrically opposite glass windows in the walls of the cell provide a means of observing the phases within the cell and the menisci between them. A valve in the top of the cell is used for introducing or removing a sample and mercury is withdrawn from or pumped into

the cell through a connection on the lower side. The line through the centers of the windows is also the axis of a trunnion mounting on which the cell is rocked to provide stirring of its contents. The cell is rotated on this mounting when the volumes of the confined hydrocarbon phases are measured.

The method of measuring the volume of the gas phase of a sample is illustrated in section A, Figure 2. Equilibrium between the phases is established by rocking the cell and adjusting the volume of the sample until no further volume changes are necessary to maintain a given pressure at a given temperature. The rocking of the cell is then stopped, and the cell is rotated on the trunnion mounting until the gas-condensate meniscus coincides with a mark in the exact center of the glass window. The angle α that the lengthwise axis of the cell makes with the horizontal is measured by means of a clinometer to determine the volume of the gas. The volume of the cell above a horizontal plane through the centers of the windows is known for values of the angle α determined by prior calibration.

Use of Cell for Measuring

The total volume of the gas and liquid phases is measured as illustrated in section B of Figure 2. Condensates are usually transparent so that there is no difficulty in seeing a meniscus in the 2-in. thickness of liquid between the windows. After the gas volume is measured (section A), the cell is rotated until the condensate-mercury meniscus coincides with the center of the window (section B). The angle β provides the measure of the combined volumes of the gas and liquid hydrocarbon phases. The volume of the liquid-hydrocarbon phase is obtained by subtracting the volume of the gas phase from the combined volumes of the gas and liquid phases.

If only liquid is present in the cell as, for example, when bubble points are being measured, the volume of the liquid phase is the volume of the total hydrocarbon sample measured with the condensate-mercury meniscus opposite the center of the window. A third phase, such as water, can be measured in the cell; it is necessary only to measure the cell angles with the condensate-water and water-mercury menisci coinciding in turn with the center of the window.

The volume of the total sample is not changed while the volumes of the phases are being measured. The attainment of equilibrium between the phases at a given pressure and temperature is followed by measuring the total volume of the sample after successive stirring intervals until the volumes measured are constant. Then, with the volume of the sample held constant—that is, no mercury enters or leaves the cell—the cell angles corresponding to the different menisci are measured in turn.

The measurements which provide liquid-gas ratio information also provide data for computing compressibility factors. The total volumes of the fluid measured in the cell at given temperatures and pressures provide

values of the function (PV/T) . The fluid can subsequently be transferred to a calibrated steel container of approximately 43 liters capacity and the fluid pressure measured with the baro-buret (9, Figure 3) to provide the limiting value of the function as pressure approaches zero.

Construction of Windowed Cell

The cutaway view of the windowed cell in Figure 3 shows the relative positions of the two window assemblies and the space in the cell where the hydrocarbon sample and mercury are contained. The cell was turned from a billet of S.A.E. 1030 steel; the sample space was closed by an electrically welded end of the same metal. A relatively thin walled vessel of this material was found by test to withstand 5,000 lb. per sq. in. pressure while submerged in a bath at -110° F. temperature and subjected to repeated blows from a 20 ounce hammer.

Trunnion bearing surfaces 12 and the openings for the windows in the cell body were machined in the same lathe setting to insure concentricity. Extra metal thickness was left in the cell ends to provide for future developments.

The two high-pressure windows used in the cell were designed on a principle discovered by Poulter (10). An optically flat surface of a 0.25-in.-thick, plate-glass disk 0.625 in. in diameter is held by the pressure within the cell directly against a hardened, stainless steel window seat that is ground and polished flat to within 0.000,01 in. No gasket is used between the window and the seat because gaskets flow under pressure and the

movement causes the glass surface to fracture. Transparent mineral oil in the window assembly connected to a pressure-control system through duct 11 transmits the disk the pressure developed by the sample. Windows of this type, tested to 10,000 lb. per sq.in., were used with the portable equipment (3, Fig. 6) for more than 3,000 hours of operation without breakage or significant leakage.

The construction of the window assembly used in the cell is shown in the left corner of Figure 3. The cell has two such assemblies, and each includes two glass disks; the outer one 4 to withstand the high pressure, and the inner one 8 to separate the mineral oil, which transmits the pressure, from the compressed hydro-carbon-fluid sample which is the source of the pressure. Inner disk 8 is held against thin rubber and asbestos gasket 2 by means of a nut. When the window is assembled, the gasket is compressed by tightening the nut until the inner disk will hold gas contained in the cell under a pressure of 80 lb. per sq.in. When the cell is in use, the pressure in oil-filled space 6 automatically is maintained 9 to 12 lb. per sq.in. higher than the pressure in the cell. Spring washer 5 and the difference in the pressures on the two faces of disk 8 hold it against its seat.

Spring washer 5 bears only slightly against high-pressure disk 4; its purpose is to hold the glass disk against seat 3 while the seat is being installed. Oil pressure on the window never is wholly relieved, once it has been applied, to prevent the window moving to a new position on its seat. The aperture of seat 3 is 0.33 in. The "unsupported area" principle of Bridgman (11, p. 32) is utilized

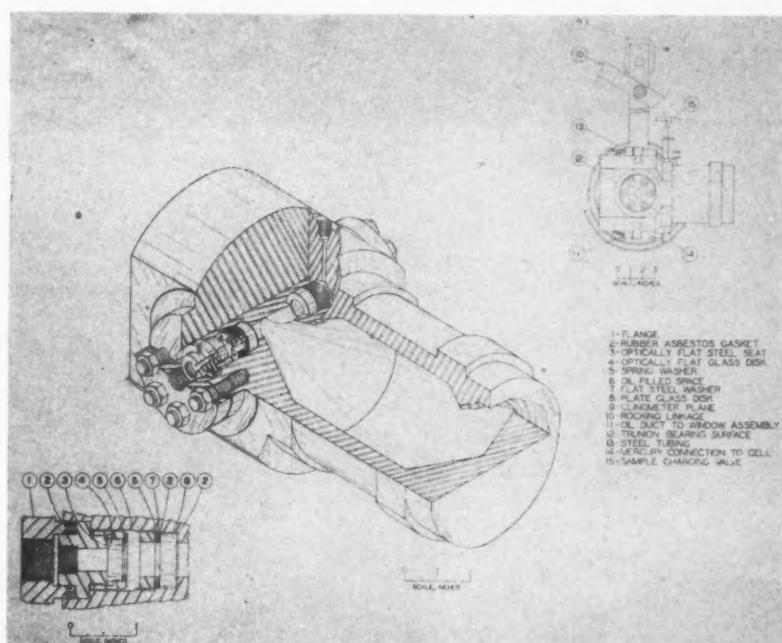


Fig. 3. Construction of windowed cell

in the design of the window-seat packing gland. By reason of the difference in areas involved, packing 2 is under 80 percent more pressure than the oil in space 6 when oil pressure forces the window seat and packing outward against bolted flange 1.

Accessories directly connected to the cell are illustrated in the upper right corner of Figure 3. The cell is rocked through an angle of 25° by means of linkage 10 and permanent connections to the cell, for oil and mercury under pressure must be flexible. Connecting tubing 13, in the form of a helical spring, provides oil under pressure for the window assemblies. Similar helical tubing used for supplying mercury under pressure to connection 14 is not shown. The flexible tubing connections are 0.125 in. outside diameter and are drawn from columbium stabi-

lized stainless steel, an alloy selected for fatigue resistance.

Cell Mounting

Figure 4 is a photograph of the cell in its mounting. The mounting is designed so that all pressure connections to the cell can be made and tested with the bath removed. The bath is installed by lifting it into place about the cell and is supported on a steel table when in the operating position.

The contents of the cell are viewed with transmitted light. An electric lamp is installed in the top end of one of the tubes attached to the window openings, and light from the lamp is reflected at right angles into the cell by means of a mirror installed in the

to the windows of the cell. The accessories and connections used to control the volume of the cell and to measure pressure in the cell are illustrated schematically in Figure 5. A pump connected at 1, pumps oil into reservoir 4 and displaces mercury therefrom into windowed cell 8. The volume of mercury moved into the cell can be followed by observing the mercury meniscus through the cell window or by watching panel lamps in an electrical circuit with electrodes 3. Mercury is withdrawn from the cell by allowing oil to flow from reservoir 4 through a bypass on the pump.

The accidental leakage of a small volume of mercury from the pressure control system, while stirring of the sample is in progress, would not affect the accuracy of the measurement of the volume of a sample in the cell. The precision of either single or successive volume measurements depends only on having the mercury meniscus in the cell exactly at the level of the axis of the windows and on accurately measuring the corresponding cell angle. A slow leakage of either mercury or oil would, of course, be a handicap in attaining phase equilibrium.

Pressures measured with a piston gage connected at 2 or with bordon-tube gages are subject to correction because of the difference in mercury meniscus levels in cell 8 and in reservoir 4. The pressure due to this column of mercury varies between 9 and 12 lb. per sq.in. and is accurately known for all cell volumes. The pressure on the mineral oil in the window assemblies is greater than that on the hydrocarbon sample in the cell by the amount of the pressure due to the height of the mercury column. As previously explained, this difference in pressure is purposely maintained so that the inner glass disks separating the mineral oil and the hydrocarbon samples will be held against their seats by pressure.

It is important that only clean oil enter the window assemblies. Chamois-skin container 6 is filled with clear oil, and the oil pressure outside the flexible envelope is transmitted to the clear oil inside the envelope without change. The only time that oil pressure in the window assemblies exceeds the pressure in the cell by more than the pressure difference provided by the mercury column is when the cell pressure is less than 100 lb. per sq.in. Valve 5 is designed to close and maintain a minimum pressure on the oil in the window assemblies so that the high-pressure glass disks cannot move on their steel seats. Valve 5 for maintaining a minimum oil pressure in the window assemblies, and container 6 for preventing the entrance thereto of oil from the pump were originally developed for the portable equipment and may not be essential with the windowed cell which has different operating characteristics.

The Cell Assembly

A photograph of the assembly of the windowed cell and its accessories is shown in Figure 6. The sides and bottom of the bath are insulated with sheets of cork 3 in. thick. The bath has two compartments; one encloses the cell and the other contains trays in which ice or solid carbon dioxide is placed

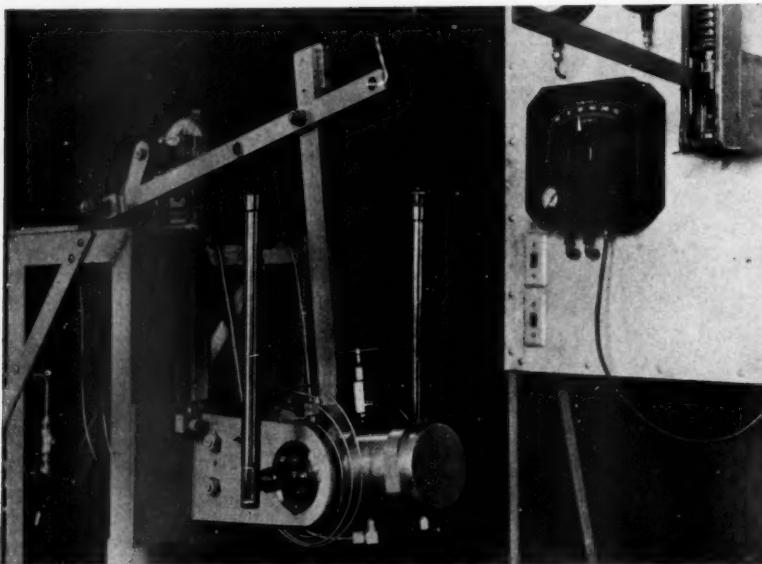


Fig. 4. The windowed cell in its mounting

ilized stainless steel, an alloy selected for fatigue resistance.

In use the cell is submerged in a liquid bath, and the angle the axis of the cell makes with the horizontal is measured on clinometer plane 9. The clinometer used to measure the cell angle is graduated to 5 minutes and is fitted with a spirit level sensitive to 2 minutes. The volume of the cell above a horizontal plane that includes the axis of the windows, does not vary linearly with the cell angle. A change in the cell angle of 5 minutes corresponds to a volume change of 1.8 cc. when the angle the cell makes with the horizontal is 0°; when the cell angle is 15° a change of 5 minutes corresponds to a volume change of 1.2 cc. and 0.3 cc. when the angle is 30°.

The cell angle changes a total of 60° as volumes from 23 to 833 cc. are measured. As shown in Figure 4, the linkage coupling can be changed to accommodate the stirring of

tube opposite the window. A mirror similarly placed in the tube on the opposite side of the cell reflects the image of the meniscus between the cell windows into the eye of the observer at the top of the viewing tube. A plate-glass eyepiece is mounted in the top of the viewing tube to protect the eye of the observer if the near window should fail while the sample volume is being measured. An added safety precaution is provided by frangible metal diaphragms soldered to the tubes opposite the windows to relieve the pressure in the tubes if gas from the cell should leak into them at a rapid rate.

Pressure-Control System

The volume of the sample space within the windowed cell is changed by adding or withdrawing mercury or an amalgam of thallium. Oil, however, is used in the pumps to move the mercury; likewise oil transmits the pressure of the sample to the piston gage and

to cool kerosene, the bath liquid. Both compartments are fitted with motor-driven propellers that stir the kerosene; the propeller in the refrigerated compartment is designed to drive cold liquid into the cell compartment when a gate between the compartments is opened by a diaphragm-actuated lever. Air to operate the diaphragm is supplied by the automatic temperature controller, which can be seen below the two pressure gauges on the panel behind the bath. The controller has a range of -80 to 320° F. The liquid in a bulb attached to the controller and submerged in the kerosene near the cell expands when the bath temperature is too high, causing air from the controller to depress the diaphragm of the lever assembly and open the gate between the bath compartments. By the time enough refrigerated kerosene is mixed with the relatively warm kerosene in the cell compartment to lower the temperature to the desired value, the liquid in the bulb contracts and the controller closes the gate.

When the cell is operated at temperatures above room temperature, electric heaters are used to warm the bath liquid—a lubricating oil is used at high temperatures. The bath temperature is controlled by a thermocouple (1, Fig. 7) in an electrical circuit which includes a potentiometer and a photoelectric relay.

The pump, the pump-oil reservoir and the mercury-oil reservoir, which are a part of the pressure-control system previously described, may be seen in Figure 6 on the angle-iron table and immediately to the left of the electric motor which drives the geared reductor and rocks the cell. The pump at the extreme left end of the table and the cylindrical displacement meter mounted next to it are parts of an assembly being developed for measuring hydrocarbon-liquid samples into the cell.

The piston gauge used for measuring pressures in the cell does not appear in the illustrations. The piston gauge has a capacity of 20,000 lb. per sq.in. and has been calibrated by two independent methods with results that agree to within 2.3 lb. per sq.in. at a pressure of 5,000 lb. per sq.in.

Operation of the Cell

The fluids flowing from gas-condensate wells are separated into their gas and liquid phases before samples are taken for subsequent laboratory investigations. The phases are recombined in the cell in the proportions of the liquid-gas ratio measured at the well when the samples were obtained. The gas usually is introduced into the cell first so that it can be measured; the pressure, temperature and volume of the gas are determined for this purpose. If compressibility data (2, p. 18) on the gas are needed, the measurement of the gas volumes over a range of definite pressures and temperatures is completed before the liquid phase is introduced.

The liquid phase required in the cell may be measured by weight or by volume in a high-pressure, steel pycnometer (9, Fig. 2) before it is displaced into the cell with mer-

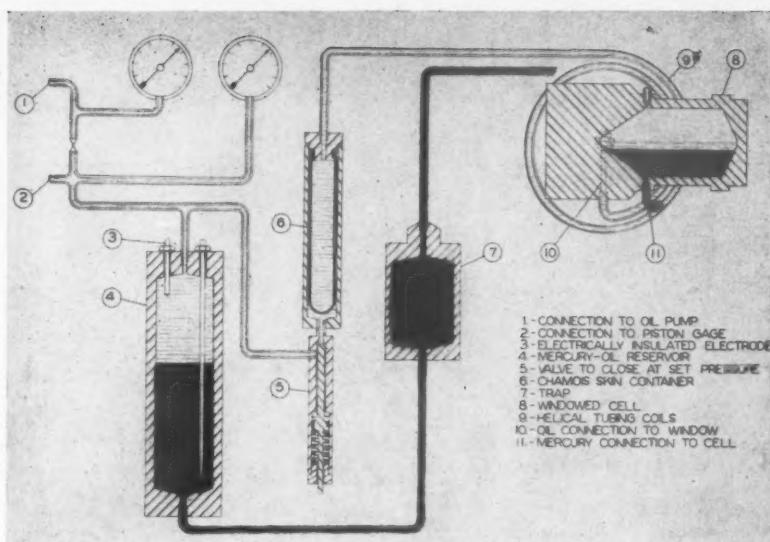


Fig. 5. Schematic assembly of pressure control equipment

cury. However, if a constant volume pycnometer is used for measuring the liquid, an exact amount of gas must be measured into the cell beforehand to obtain the proper liquid:gas ratio. Another method that may be used for measuring the liquid phase involves use of the displacement meter, an instrument constructed on the principle of a calibrated hypodermic syringe and designed for high pressures. With this instrument any desired volume of liquid may be measured into the cell to provide the proper liquid:gas ratio with the measured portion of gas present. When the displacement meter is used, the tedious operation of measuring a predetermined and exact amount of gas into the cell is avoided.

The procedure in measuring the volumes of

the two-phase hydro-carbon mixture is similar to measuring gas volumes to obtain compressibility data except that the volume of the liquid phase at each pressure and temperature also is measured. With reference to Figure 1, section B, isotherms corresponding to successively lower temperatures T_1 , T_2 , T_3 and T_4 are evaluated in turn in approaching the temperature T_c of the critical state. At these temperatures, values of liquid:gas ratios decrease to zero (the dew point) as pressures are increased. If cell temperatures are further decreased to T_5 and T_6 , then, when liquid:gas ratios are measured at pressures decreasing in value, the liquid:gas ratios increase continuously. At temperatures and pressures closely approximating the critical

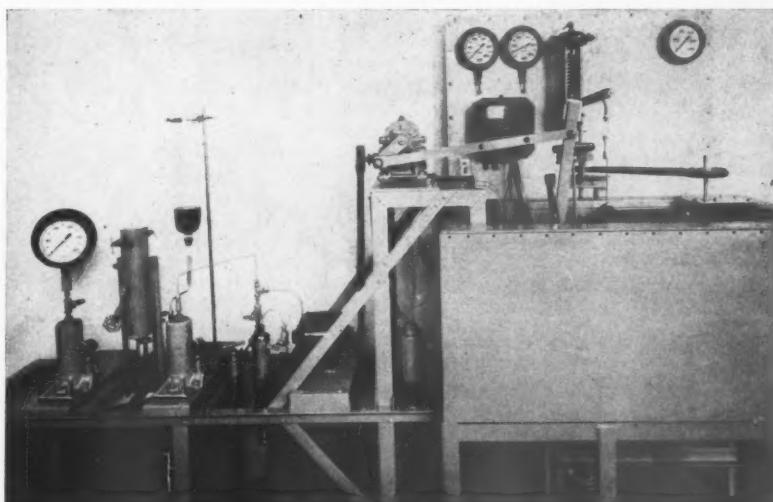


Fig. 6. The windowed cell assembly

temperature and pressure, the liquid:gas ratios fluctuate markedly with slight changes in either temperature or pressure. Use is made of these phenomena in determining the critical state of the gas-condensate fluid.

Acknowledgements

Experimentally determined data on the properties of gas-condensate fluids by the Bureau of Mines have been collected and completed in cooperation with the American Gas Association. The interest taken in this work and valuable assistance given by E. L. Rawlins, chairman of the Gas Well Deliveries Subcommittee of the American Gas Association, is gratefully acknowledged. The interest shown by B. V. Elliott of the H. C. Price Co. in the welding process used on the cell also is appreciated. J. O. Greenwalt, F. G. Mueller, J. Tolson and P. G. Doye of the Bureau of Mines constructed the cell and many of its accessories. R. V. Smith, of the Bureau of Mines, assisted with the calibrations of the cell and supervised the testing of materials for low-temperature, high-pressure service. C. R. Sponsler, H. G. Orr and C. F. Jones assisted the writers in preparing the illustrations. H. C. Miller and N. A. C. Smith have offered valuable suggestions for preparing the manuscript. The investigations are under the supervision of R. A. Catell, chief, Petroleum and Natural Gas Division, Bureau of Mines, and H. C. Fowler, supervising engineer, and C. J. Wilhelm,

engineer in charge of production, Petroleum Experiment Station, Bartlesville, Oklahoma.

REFERENCES

- Eilerts, Kenneth, Smith, R. Vincent and Wright, R. C. Equilibrium Cell for Investigating Properties of Fluids from Petroleum and Natural-Gas Reservoirs (With a Section on Hypothetical Phase Relations of Natural Hydrocarbon Mixtures), Bureau of Mines Report of Investigations 3514, April 1940, 30 pp.
- Eilerts, Kenneth and Smith, R. Vincent, Specific Volumes and Phase-Boundary Properties of Separator—Gas and Liquid—Hydro-carbon Mixtures, Bureau of Mines Report of Investigations 3642, April 1942, 57 pp.
- Eilerts, Kenneth and others, Portable Equipment for Measuring Properties of Fluids from Gas-Condensate Wells, American Gas Association Monthly, April 1944, pp. 148-52.
- Cope, J. Q., Lewis, W. K. and Weber, H. C. Generalized Thermodynamic Properties of Higher Hydrocarbon Vapors, Ind. and Engr. Chem., Aug. 1931, p. 887.
- Brown, George Granger, Souders, Mott Jr. and Smith, R. L. Fundamental Design of High Pressure Equipment Involving Paraffin Hydrocarbons. I. Pressure—Volume—Temperature Relations of Paraffin Hydrocarbons, Ind. and Engr. Chem., May 1932, p. 513.
- Kay, W. B. Density of Hydrocarbon Gases and Vapors at High Temperature and Pressure, Ind. and Engr. Chem., Sept. 1936, p. 1014.
- Sage, B. H. and Lacey, W. N. Volumetric and Phase Behavior of Hydrocarbons, Stanford University Press, 299 pp.
- Reid Laurance S., Some Factors Influencing Recovery of Condensate in Recycling Operations, Amer. Inst. Min. and Met. Engrs., Pet. Tech. Nov. 1940, Tech. Pub. No. 1259.
- Eilerts, Kenneth, Smith, R. Vincent and Cook, Alton B., Properties of a Petroleum-Reservoir Liquid and its Residual with Applications of the Data to Production Problems, Bureau of Mines Report of Investigations 3474, Oct. 1939, 47 pp.
- Poulter, Thos. C. Apparatus for Optical Studies at High Pressure, Physical Review, June 1, 1932, pp. 860-871.
- Bridgman, P. W., The Physics of High Pressure, The Macmillan Co., 1939, 398 pp.

"With introduction of the latter," said Mr. Nye, "offices for the payment of gas bills became also appliance showrooms and demonstration centers. Organizations of gas companies formed for mutual assistance with technical and promotional problems led ultimately to establishment of the American Gas Association, which is today a dominant factor in advancement of the gas industry and one of the country's most progressive trade organizations."

The Washington Gas Light Company's engineer is the youngest member of the Palaver Club, whose exclusive roster contains some of Washington's outstanding men of science and letters.

Brooklyn Curtails Gas House Heating

THE Brooklyn Union Gas Co. recently announced that it would accept no more orders for gas heating equipment until April 1, 1947, because of the unprecedented demand for gas "space heating" and the resultant increased gas load.

"This emergency action," said Clifford E. Paige, president, "is the direct result of an overwhelming demand for gas heating. This demand is now so great that if we were to try to meet it the resulting load would far exceed our present capacity to produce gas."

Mr. Paige indicated that to keep pace with the sharply rising demand for gas the company had completed in 1945-'46 more than \$5,000,000 worth of its gas production expansion program. Even this, however, he said, is not enough and still further additions to the productive capacity "must be made and they are in process." He added:

"Because of the difficulties in obtaining materials and supplies we cannot make any further additions to our plant capacity in time for next winter's peak usage. Moreover, the heating situation is further aggravated by the continued shortage of meters suitable for house-heating installations."

The company suggested that consumers in the Brooklyn area defer the purchase of gas heating equipment until "after next winter."

Ruud Anticipates Bright Sales Future

ACCORDING to an announcement by Richard H. Lewis, president, Ruud Manufacturing Co., the company's backlog of orders is the largest in its history. The outlook for future sales is improved by the broadening use of natural gas in urban areas and the rapid increase of LP-gas installations in suburban and rural sections, he said.

An additional plant is under construction at Kalamazoo, Mich., which will add to the company's production facilities already in that city. The company is making additions to its line of products, to cover commercial and industrial markets as well as the residential field.

Demonstrates Nature of Fuel Gas In Simple Experiment



L. Bert Nye, Jr.

prehensive discourse on gas industry before Washington's unique Palaver Club, Mr. Nye explained:

"As I strike this match, friction ignites the chemicals at the tip and a portion of the wood stem is then quickly heated to the temperature at which it becomes a gas. The match, in common with any solid or liquid fuel that burns with a flame, must be converted—wholly or partially—to a gas in the course of the combustion process. In fact, a simple and accurate definition of a flame is 'a burning gas.'

"The trick sought and found by the early

chemists of our industry was to interrupt this combustion process between the formation of gas and its ignition—to capture and transmit the gas to a distant point for subsequent ignition. The basic method consisted of heating raw fuel in a confined oven to a temperature at which the solid or liquid matter would be converted to a gas which was piped off to a storage vessel or gasometer."

The raw fuel was whale oil in the first retorts of his company, according to Mr. Nye, who traced the interesting development of the Capital's gas service from its inception as a means of relieving the blackness of city streets. He stated that coal gas soon replaced oil gas, permitting a reduction in rates from \$8 to \$4 per MCF—and a sizeable over-the-counter business in by-products.

Mr. Nye pointed out that street lighting and later interior lighting provided a solid foundation for the gas industry of today. He showed how early electric competition forced the development of the Welsbach mantle, with its emphasis on the Bunsen burner whose wider application was soon to embrace cooking and water-heating appliances.

A Labor Policy that Works

Large gas range manufacturer has common-sense policy that has solved all labor problems without outside assistance

BY TOM BOARDMAN*

Labor Editor, *Cleveland Press*

THE American Stove Co., like many Cleveland plants almost unheralded during periods of industrial strife, has a labor-relations policy that works.

It works to the advantage of the employee, who says quite frankly he is among the highest paid workmen in Cleveland.

It works to the advantage of the company, which, despite the usual problems of reconversion, is turning out gratifying numbers of Magic Chef kitchen ranges and commercial cooking equipment.

Based on sound knowledge of mutual problems by both parties, the policy relies on an atmosphere of frank discussion of gripes—by both labor and management.

Use Common Sense

It is based on good common sense all around—the brand of good judgment that made Cleveland's wartime labor record one of the nation's best.

American Stove is one of the many companies that is extending that record into its peacetime system—a number sufficiently large that it will be noted in a labor-management exposition in Public Hall Sept. 6-8.

Neither labor nor management at American Stove claims to have anything particularly extraordinary in its handling of labor problems. They do confess to a mutual respect and trust, and



Labor-management problems at American Stove Co. are settled around this table by Joseph Ziegler, George Fetchik, Lou Dolsak, Margaret Roach, A. W. Leeseberg and W. C. Lehman



Assembly lines at American Stove turn out thousands of gas ranges and commercial cooking equipment weekly. Here employees work on the final assembly line for domestic equipment

have proven their ability to settle little differences before they become big differences.

Quick handling of minor grievances is a keynote. If a committeeman gets a gripe—and there are plenty—he and the worker go immediately to the foreman.

No Time Lost

If it can't be settled on the spot, it goes—the same day—to the personnel manager. The plant manager sits in if necessary. There's no dead time for grievances to accumulate.

Both have another principle they feel is fundamental. Grievances and contract negotiations are settled within the plant.

Quickly Settled

The company does not rely on its attorneys. The union, Metal & Machinery Workers, I. U. 440, I. W. W., does not call in its international representatives. Negotiations are a family matter.

"We learned that lesson six years ago," says Lou Dolsak, a union committeeman. "We had a short strike, and we were trying to settle it at conciliation service. We sat down at one end of the table and listened to our lawyers argue with their lawyers.

"Finally we saw that wasn't getting us anywhere, so we cleared them all out, talked it over directly with plant management, and we had it settled in an hour. We were back at work next morning."

Plant management at negotiations (company headquarters are in St. Louis) includes A. W. Leeseberg, manager, W. C. Lehman, personnel manager, Miss Margaret Roach, his assistant, and George Feathers, supervisor in the press department.

All the men have had plant experience. They know plant problems. They speak plant language.

The union committee is composed of such old-timers as George Fetchik, Joseph

* Reprinted from the *Cleveland Press*.

Ziegler and Dolsak, who know company problems.

If management has a problem, they call the committee in, and ask union support on a course of action. Usually they get it. If they don't, at least they talk it over.

Ask What They Want

The same goes for the union. If they want something, they ask for it, across the table. Maybe they get it. Maybe they don't. But each knows where the other stands.

There are other factors in the current labor-management picture at American Stove. They include such things as the firm company policy of filling higher-pay jobs from the lower brackets, which has led, in the long pull, to the steady advancement that discourages rapid turnover.

They include such things as a policy described as completely sound by both union and management on handling of returning and newly hired veterans.

But basically, it is the determination of both groups to solve their own problems, without outside help, on the spot, that is making the American Stove labor relations policy work.

Gas Sales Increase in July

SALES of gas to ultimate consumers by gas utility companies in July increased 2.2 per cent over a year ago, totaling 1,799,046,000 therms compared with 1,759,915,000 therms sold in July, 1945, the American Gas Association recently reported. The Association's index number of total gas utility sales was 183.8 per cent of the 1935-39 average.

For the 12 months ending July 31, 1946, sales of utility gas were 25,722,000,000 therms, a decline of 1.7 per cent under the previous year.

Sales of mixed gas during July amounted to 72,500,000 therms, an increase of 3.7 per cent, compared with sales of nearly 70,000,000 therms in July, 1945. Mixed gas sales for the 12 months ending July 31, 1946 gained 1.8 per cent over those for the preceding 12 month period. The July, 1946 index of mixed gas sales stood at 164.5 per cent of the 1935-39 average.

Manufactured gas sales in July rose 0.4 per cent, to total 143,600,000 therms against 143,100,000 therms a year earlier. Sales for the 12 months ending July 31, 1946 were 2,057,000,000 therms, a decline of 1.1 per cent. The July index of manufactured gas sales stood at 142.7 per cent of the 1935-39 average.

Utility sales of natural gas amounted to 1,582,900,000 therms, an increase of 2.3 per cent over sales in July, 1945.

Gas Promotion in Hartford



Above are a billboard, window display and two advertisements used in the September promotion campaign of the Hartford Gas Co., Hartford, Conn. Their predominant theme is the fine performance of gas appliances because of the superior characteristics of the gas flame—in other words, "It's the flame that makes it perfect."

Promotion

PREPARED BY A.G.A. PROMOTIONAL BUREAU

COOPERATIVE promotional programs for gas companies and banks and other financial institutions are being conducted with great success and mutual profit in many parts of the country. These joint enterprises are usually geared to the aggressive campaigns the banks are waging for loans on new construction, home modernization and appliances. The gas industry's interest in these activities is direct and important. Here are a few examples of how some gas companies and the banks of their communities work together.

1. Banker-Builder Meetings. The advantages of gas and the self-interest of the banker, builder, architect and others in the installation of gas appliances in the modern home have been pointed out successfully in many meetings. These usually take the form of luncheons or dinners with the gas company acting as host. The guests include leading bankers, building and loan men, insurance representatives, builders, architects and others playing an important part in the home construction program.

The pattern for meetings of this type varies greatly and the current trend is toward specialization and selectivity; that is, covering the leaders of one industry or closely related groups at a time. Too many interests in the audience dilute the strength of the direct appeal.

Top management from the gas company must take part in these programs and the man selected to tell the story of the modern application of gas to better living must be qualified and prepared to answer almost any question. The panel arrangement has been found effective because it permits several experts of the company to develop various aspects of the theme.

2. Home Building Clinics. These are jointly sponsored and are conducted for the information and education of prospective home builders. Authorities on various aspects of building, ranging from selection of lot to type of appliances used, are booked as speakers and usually their remarks are reduced to pamphlet form and distributed beyond the actual audience. Interest is obtained by advertising and publicity and invitations are mailed by each of the sponsors. Excellent newspaper publicity has been an important by-product of these meetings. One of the most successful programs of this type was conducted this spring in Bridgeport, Connecticut.

3. Home Builders Clubs. This is a variation of the clinic in which gas company

representatives appear as speakers or act as consultants.

4. Home Planning Bureaus. These are in operation in hundreds of banks and many gas companies. Some are very elaborate and cover every phase of home building and others are modest, confined to making available building plans, guides and information on materials and construction and similar publications.

The Reference Manual on Modern Gas Service has been welcomed and given a prominent place wherever it has been made available to banks with active home planning bureaus or advisory staffs.

5. New Freedom Gas Kitchen. This has been a highly popular type of joint promotion. Many financial institutions are featuring the reprints of national A. G. A. ads in their window and lobby displays. These are used to promote loans for new construction and modernization. Some banks have used the kitchen color prints and copy as the inside pages of a four-page letter addressed to prospective borrowers and savings depositors. Models of kitchens are in great demand for bank displays. The kitchen illustrations and text appearing in the newspaper ads and direct-by-mail literature of many banks.

6. Gas Appliances. Banks are tremendously interested in appliance financing more than 10,000 institutions having announced plans for increased activity in the consumer credit field. A number of these are looking forward to displaying new gas appliances in their lobbies and in windows as a means of promoting their appliance financing plans. The advertising managers of banks will be glad to have pictures of gas appliances as illustrations for their consumer credit ads.

7. Food Preservation. Country banks and even some in metropolitan areas have given active support to the home canning and food preservation programs, both during the war and in the current famine relief campaign. These institutions will welcome the material supplied by home economists of gas companies and will be helpful in publicizing their programs.

8. Bank Visits. Many gas companies are enjoying the benefits resulting from calls made on the officers of banks who are in charge of mortgage loans, consumer credit, new business and advertising. The same applies to building and loan associations, savings associations, mortgage companies, insurance companies, finance companies and private lenders. These calls frequently yield important information regarding proposed operations and give the gas company an opportunity to do its promotional work long before construction starts.

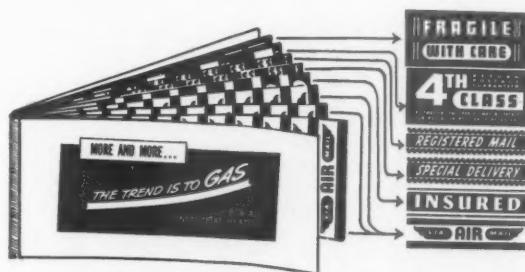
The Promotion Bureau is building cordial relationships between the gas industry and the national trade associations representing the various types of financial institutions. It will be glad to assist member companies work out cooperative plans with their banks and others on the community level.

Postickers

HERE is a step recommended by the Association's Committee on National Advertising whereby gas companies may promote locally the industrial and commercial gas national advertising slogan presently appearing in 62 magazines which run up a total of 7,630,000 impressions a year.

POSTICKERS, illustrated here, appear to offer a simple and practical way of localizing the impact of that increasingly popular claim that "More and More the Trend is to Gas." Containing six different types of often-used postal stickers, a total of 56 individual gummed labels, the packet is designed for use by sales personnel of gas companies. POSTICKERS have a longer life than match books and circulars, and have the added virtue of being preserved until the last sticker is gone.

Shottland Associates, Inc., 666 Madison Ave., New York 21, N. Y., are mailing samples of POSTICKERS to all gas companies. Inquiries and orders should be mailed direct to Shottland.



Teaching Guide With "Hot Water Magic"

To make the teacher's edition of the new home laundering manual most effective, a teaching guide has been prepared and is being distributed with all copies of "Hot Water Magic" to be used in schools. Both pieces are now being shipped to gas companies for distribution to home economics teachers.

The teaching guide breaks down the subject matter covered in the manual for separate class sessions. An outline is provided for each class meeting showing the subject matter to be covered and suggesting assignments, demonstrations and special projects for each phase of the home-laundering problem.

The use of authoritative guest speakers is suggested to emphasize particular points and outlines are provided for student-written skits to help dramatize the value of proper home laundering. Numerous class participation projects are included in the guide and are in line with progressive teaching methods now favored by most schools.

The teacher's edition of "Hot Water Magic," which is offered free to gas companies for distribution to home economics teachers in their territories, has been ordered in large quantities by most companies. Orders for the consumer edition of the booklet, which will be off the press in about two months, are mounting steadily and it is expected they will total well over 100,000 before the first press run is completed.

"Hot Water Magic" was produced by the Promotion Bureau at the request of the Water Heating Committee of the Residential Gas Section.

Speakers in Demand

OCTOBER will see the program chairmen of thousands of organizations anxiously undertaking the job of obtaining speakers for their fall meetings. They will welcome speakers from the gas industry and many companies are already letting it be known that their men and women are available for talks.

In addition to the usual service clubs, trade associations and women's organizations, an effort should be made to book a gas company speaker before large and influential audiences such as those found at meetings of bankers' associations, conventions of hotel and restaurant men, the various engineering and scientific societies, and veteran groups. Schools and colleges, of course, should not be overlooked.

The best way to open the door to invitations is through personal relationships. That lacking, then by correspondence. Lists of organizations can usually be obtained from chambers of commerce. They often give the names of officers and program chairmen. Those who have been most successful in this work watch the newspapers

for notices of coming conventions and meetings. The Promotion Bureau will act as a clearing house for advance information regarding such meetings and will relay the facts to regional associations and member gas companies.

Recommendation For Next A. G. A. Convention

THE Time and Place Committee of the American Gas Association, of which Nils T. Sellman, vice-president, Westchester Lighting Company, is chairman, informed the Executive Board of the Association at its meeting on September 11, of its intention to recommend to the Atlantic City Convention that the 1947 Convention of the American Gas Association be held in San Francisco, Calif., from September 29 to October 3, 1947.

Approval of the recommendation by the Convention is required, but subject to such approval by the membership of the association, tentative arrangements have been made to convene in San Francisco next year.

Survey Shows 140,000 Gas Producers

A SURVEY which has been conducted by the Independent Natural Gas Association indicates that there are approximately 140,000 persons directly interested in the production of natural gas. Of 270 questionnaires mailed out by the Association to individuals and companies purchasing gas, 230 replies showed that they purchased gas from 11,074 producers and pay royalty to 129,328 royalty owners.

While there are some duplications in these figures occasioned by buyers paying to the same producers and royalty owners, the total figures are approximately correct because oil companies producing gas with oil were not included in the survey.

Norwalk Buys Connelly Co.

THE Connelly Iron Sponge & Governor Co. has sold its regulator, check valve and apparatus business, including all inventory equipment, patents and goodwill to Norwalk Valve Co., South Norwalk, Conn. W. L. Lyon, president of Gas Consumers Association, will be general manager. The combined business will be operated from South Norwalk, Conn., with the cooperation of Gas Consumers service branches.

Sales Course

THE completion of a training course in "Heating Salesmanship" has been announced by Robert S. Waters, president of the National Radiator Co. This course was undertaken following a series of veteran sales meetings held some time ago. The completed training program required well over a year of extensive study and research.

Convention Calendar

OCTOBER

- 7-11 •American Gas Association, 28th Annual Convention and Exhibition, Atlantic City, N. J.
7-11 •34th National Safety Congress and Exposition, Stevens Hotel, Chicago, Ill.
28-30 •Midwest Gas Association and Iowa State College Gas School and Conference, Ames, Iowa

NOVEMBER

- 11-14 •National Hotel Exposition, Grand Central Palace, New York, N. Y. (A. G. A. Sponsored Combined Exhibit).
18-22 •National Metal Congress and Exposition, Atlantic City, N. J. (A. G. A. Combined Industrial Gas Exhibit).
21-22 •Mid-Southeastern Gas Association, 8th Annual Meeting, Sir Walter Raleigh Hotel, Raleigh, N. C.
22-23 •New Jersey Utilities Association, Seaview Country Club, Absecon, N. J.

DECEMBER

- 2-6 •American Society of Mechanical Engineers, New York, N. Y.
2-6 •National Exposition of Power and Mechanical Engineering, Grand Central Palace, New York, N. Y. (A. G. A. Combined Exhibit).

1947

JANUARY

- 27-31 •Seventh International Heating and Ventilating Exposition, Lakeside Hall, Cleveland, Ohio. (A. G. A. Sponsored Gas Exhibit).

MARCH

- 20-21 •New England Gas Association, Annual Convention, Boston, Mass.

APRIL

- 7-9 •A. G. A.-E. I. Accounting Conference, Hotel Statler, Buffalo, N. Y.
14-16 •A. G. A. Distribution and Motor Vehicle Conference, Hotel Cleveland, Cleveland, Ohio.

- 16-18 •Southern Gas Association, Biloxi, Miss.

- 25-26 •Gas Meters Association of Florida-Georgia Annual Meeting, Boca Raton, Fla.

JUNE

- 2-4 •Joint Production and Chemical Committee Conference, Hotel New Yorker, New York, N. Y.
16-18 •Canadian Gas Association, General Brock Hotel, Niagara Falls, Ontario.

Accounting Section

E. F. EMBREE, Chairman

LEITH V. WATKINS, Vice-Chairman

O. W. BREWER, Secretary

Phases of Tax Administration

BY NORMAN D. CANN

Tax Consultant, Washington, D. C.

INCOME tax administration involves the assessment and collection of taxes and the enforcement of all provisions of law with respect to returns, penalties and other matters. The Bureau of Internal Revenue, headed by the Commissioner, is an integral part of the Treasury. The Chief Counsel of the Bureau of Internal Revenue, who is the Legal Advisor to the Commissioner, is also an Assistant General Counsel of the Treasury, and, in a direct sense, is responsible to the General Counsel of the Treasury.

It has been said that the Bureau of Internal Revenue has three primary functions. It must assess and collect taxes; like a court it must consider and decide thousands of contested cases, passing on both questions of law and of fact; and, finally, it must lay down rules of general application, rules which Congress found impracticable or difficult to write in the statutes.

The impact and scope of Bureau action affect the economic and social life of the entire nation and for a number of years the public has been demanding that tax processes be speeded up. There is a crying need for simplification of tax administration. As a step in this direction, I advocate certain organizational changes.

Commissioner Is Administrator

Usually the decisions and announced policies of the Bureau are referred to as decisions and policies of the Commissioner; that is to say, the Commissioner is considered the "tax administrator." In a large sense this is true, and yet, under the existing organizational setup wherein certain powers are reserved to officers of the Treasury apart from the Commissioner, this is frequently not the situation. It may well be said that many regulations and policies are adopted which do not necessarily represent the opinion of the Commissioner acting in his capacity as "administrator."

It is my personal view, probably a minority one, that because of the importance and magnitude of the present-day task of collecting taxes, full control of the operations of the Bureau, particularly in the interpretative and enforcement fields, be restored to the Commissioner. This policy is advocated because I believe that once the statutes are written the administration thereof should be vested in one head who should be charged

Presented at A. G. A.-E. I. National Accounting Conference, Cincinnati, Ohio, April 1-3, 1946.

with full responsibility. I also believe that the administrative concept should prevail in the interpretative field just as it should in the enforcement and collection field. Necessarily it would follow and it is my suggestion that the Chief Counsel would be responsible to and serve under the direction of the Commissioner rather than in the present dual capacity previously referred to.

Wartime Teamwork

In making these observations, I would pay tribute to the splendid cooperation and understanding which has existed between officials of the Bureau and their fellow employees at the Treasury who, during the war years, through excellent teamwork, did such a remarkable job in administering war-time collections, including revolutionary changes such as tax-collection-at-the-source, etc. At this time, however, we are beginning to think of perfecting our tax machinery and my suggestion is that, as a start in this direction, the authority of the Commissioner be restored and increased as may be necessary.

It has been suggested from time to time that the Bureau should be made an independent agency. Bills have been introduced into Congress to that effect. I have mentioned the possibility of establishing the Bureau as an independent agency and would point out that in other countries the collection of revenue is performed by an independent agency as, for example, in Great Britain and Canada. That is to say, the collection of revenue should be made a separate function from matters of financing. There are, of course, many objections to setting up the Bureau of Internal Revenue as a separate agency and it may well be that the speeding up of tax collections and of simplifying tax administration can be accomplished by making the Commissioner the responsible person for interpreting the statutes and laying down the policies with respect to the collection of the revenue without setting it up as an entirely independent agency.

My concept would require legislation in that it would eliminate, among other things, the necessity of the Secretary, or some Assistant Secretary, passing on Treasury decisions, closing agreements, compromises and rulings of general application.

Under existing statutes, the Commissioner must report to the Joint Committee on Taxation all proposed refunds in excess of \$75,000.00. At the time this figure of \$75,000.00 was determined, it was considered to be such an amount as should be the subject of special consideration. Rates of tax have sky-rocketed upward since this statutory provision was adopted and a refund of \$75,000.00 is no longer an unusual or exceptional matter. The preparation of detailed reports on such cases has become burdensome and has slowed up the administrative handling of the refund job. I suggest that the ceiling be lifted to \$250,000.00 and it might well be that consideration should be given to the repeal of the existing statute requiring such reports.

While time does not permit any detailed consideration of the Internal Revenue Code, I wish to take this opportunity to express the view that there is great need for simplification of existing tax statutes, including a better coordination of Federal estate, gift and income tax statutes. It will be generally agreed that the income tax law is complicated with respect both to the determination of taxable income and to the computation of the tax after such determination is made. The complexities are a product in part of the scope of the Act, partly to the draftsmanship, and a great deal more is due to the complexities of business and family transactions with which the law attempts to deal, often in specific terms.

Simplification Needed

It is my view that a capital study of the law, backed by a determination to achieve simplification, could produce helpful results. Many of the provisions which may appear to the casual student to be useless verbiage have been inserted at one time or another to modify or explain the application of law in particular situations. Too frequently they have been written to assure more reasonable or more equitable treatment of the taxpayer. Much too frequently they have been inserted to prevent evasion, frequently punishing too many righteous businessmen for the shortcomings of a few. Sometimes it might be better administration for the sinners to go free. Because modern business is a complicated affair, necessarily a tax law that is stated simply and concisely must leave greater room for administrative interpretation as contrasted with the law which covers more detail with precision.

Another source of uncertainty in the case of the income tax has been the frequency of amendments. Since the first Act passed in 1913, twenty-two major amending enactments have been voted. Taxpayers have never had a chance to become adjusted to a particular set of requirements because of these frequent changes. The practice of adding new provisions retroactively has added to the confusion, although here it may be said that both the Treasury Department and the Congress are presently making every effort to avoid any further retroactive amendments.

There is a necessity for revising the existing Revenue Code in many particulars, but, objectively, the next revision should be enacted with a view to permanency, possibly leaving the rates flexible so that they can be lowered or increased with a view toward adequate Federal revenues, having in mind high rates in periods of prosperity and low rates in periods of depression.

Any consideration of our system of federal taxation would be incomplete without some reference to the confusion which now exists in our courts respecting their important contribution to tax administration.

Restriction by Interpretation

Time does not permit the complete and detailed consideration which I would like to give here to the need for simplification of the review mechanism in tax cases, but it does permit expression of a few summary views with respect to some of the recent restrictions placed on our constitutional court system by judicial interpretation.

It was not enough, in the Supreme Court's view, that we had a mere ten circuit courts of appeal and a court of appeals, with their necessarily numerous decisions to follow and digest, but now, several years after the Dobson rule, tax counsellors are confronted with a situation where they must not only know what the tax law is (for use before the Tax Court) but what the "true" law is (for use before our constitutional court system). I refer to a recent decision of the 2nd Circuit wherein Learned Hand in the opinion of the court says: "Hence, we can see no reason why our ruling in *Alpers v. Commissioner* * * * should not have the same authority as any other of our decisions, *should the question arise in a district court* (italics added); for it has never been intimated that the decisions of the Tax Court have that finality as precedents, which they have when under review."

Cite *Kirschenbaum v. Commissioner*, 2nd CCA, April 8, 1946—PH 72431.

Thus, the choice of a forum can cause a different application of the same law on the same set of facts. It seems incredible.

The law courts are by constitutional mandate and historical precedent bound to determine the case presented in accordance with the law, but the "legislative" mandate in the Dobson rule only requires the Tax Court to adopt a reasonable view of the law, which obviously might be different from the court's view. As Justice Frankfurter said in his concurring opinion in the Bingham case:

"But, if a statute upon which the Tax Court unmistakably has to pass allows the Tax

Court's application of the law to the situation before it as a reasonable one * * * the Tax Court cannot in reason be said to have acted 'not in accordance with law.'"

Thus the fact that in a given situation either of two views would be reasonable is not important, but that both should prevail is intolerable.

Regardless of the theoretical arguments that can be advanced by the esoteric on such questions, the taxpaying public may well question whether it is receiving justice and whether it is receiving sound tax administration.

Some solutions to this problem naturally present themselves. Shall we pass legislation to repeal the "Rules"; shall we do as Traynor

and the Department of Justice. Whenever a tax case arises in the District Court, or is taken on appeal from the decision of the Tax Court, the prosecution of the matter then becomes a responsibility of the Department of Justice. Now, it so happens that as a practical matter there has been splendid cooperation and understanding between the Department of Justice and the Office of the Chief Counsel of the Bureau of Internal Revenue, but notwithstanding all of that, it is my view that the Commissioner of Internal Revenue should determine what matters should be litigated and that he should be in a position to make sure that the case is not overargued by government counsel. It has happened more than once that the Government has won a case that it would have been better if it had lost, and it has frequently happened that it has won a case on a line of reasoning that further complicates tax administration both for the taxpayer and for the Government. An example of this is the recent Supreme Court decision in the Frances E. Tower case and the A. L. Lusthaus case.

Handling Refund Claims

I assume that there is interest in what the prospects are for speeding up of the handling of refund claims, particularly with reference to claims filed under Section 722. The Bureau estimates that the total number of taxable excess profits tax returns filed for the years 1940 to 1945 will reach 265,000, and the total excess profits tax liability for that period is estimated at 46.3 billions. It is estimated that applications for relief will total 66,000. The excess profits tax liability of the corporations applying for relief will aggregate more than twenty billion dollars, and the reduction in tax sought will approximate ten billion dollars. As of today, the applications already filed total approximately 39,000 involving claimed tax reductions of approximately three and three-quarter billion dollars. Approximately 12,000 applications have been disposed of, over half of them by withdrawals. The amounts of refunds allowed to date have been nominal. However, there are in process a considerable number of claims recommended for partial allowance involving large amounts. The inherent difficulties in administering this provision of the statute necessitate examining officers spending months and years before reaching a conclusion in a given case. You may recall that Judge Opper of the Tax Court, in referring to Section 722 in the case of *Fezandie & Sperrle, Inc.*, said:

"Dealing with the reconstructed base period of Section 722 for excess profits tax purposes calls to mind Mr. Churchill's reference, in a different context, to a 'riddle inside a mystery wrapped in an enigma.' Procedure under that section seems to call for founding hypothesis on an assumption based on supposition." In all fairness, one cannot be too critical of administrative delays or for the steps that have been taken to protect the revenue. It also must be recognized that taxpayers and their representatives generally have experienced great difficulty in furnishing the necessary information to support their claims, even after making due allowance for what has

suggests, abolish all appeals from the District Courts and Court of Claims and centralize in the Tax Court with control and appeal, if desired, through a Court of Tax Appeals? In carrying this out, he suggests decentralizing the Tax Court (then the Board of Tax Appeals) into five divisions like our present district courts (see Roger John Traynor, 38 Col. Law Review, 1393); or as Griswold suggests (see Erwin N. Griswold, *The Need for a Court of Tax Appeals*, 57 Harvard Law Review, 1153), continue jurisdiction, in all district courts as at present, but have all appeals on tax matters, regardless of the court of original jurisdiction, go to a single Court of Tax Appeals which could and should be an Article III constitutional court of the weight and dignity of our present courts of appeals.

Regardless of the course followed, some action is needed, and that immediately!

It is now my personal view that the surest and most expeditious way to correct this "deficiency" in tax administration is to revoke the Dobson rule by legislation, instead of leaving it to be attacked and cut down piecemeal by decisions and restore the vitality and authority to our circuit courts which they have historically had, and thereby retain a freshness of view and quality of independence contemplated by our Constitution, which might be impinged upon by specialized handling of particular problems.

It should be recognized that probably some of our difficulties in the courts arise out of the present organizational setup of the Treas-

been referred to as unreasonable requests on the part of Bureau representatives for additional information.

It is probably accurate to say that the Bureau, since the enactment of these relief provisions, has had to go through a process of educating its people, and it is proper to state definitely that it was never intended on the part of the Bureau that its employees would take what has been referred to as a "negative attitude." Whether we like it or not, one must recognize that the Bureau employees, as a practical matter, do not look as favorably on claims for refund as they do on the assertion of a deficiency. This is true, notwithstanding that the executives of the Bureau and of the Treasury Department have reiterated a thousand times or more that claims for relief should be allowed regardless of amount, provided they are *meritorious claims*. It is not unnatural or unreasonable that the Bureau should safeguard the handling of refunds. Congress itself recognized the necessity of special treatment with respect to refunds when it established the existing procedure for the review by the Joint Committee on refunds in excess of \$75,000.00. Summarizing, it is my view that substantial refunds will ultimately be allowed under Section 722 as well as Section 721, whether the present administrative policies are continued or modified.

One word about the 722 bulletin. This document has been both assailed and praised. The authorship of this document has been attributed to me. I cannot claim this distinction, although I was a contributor, and, to a certain degree, supervised the preparation of the bulletin. This bulletin was the composite product of a group of outstanding and especially trained personnel, including accountants, lawyers, economists, and others. It was furnished the public in order that it might be made aware of the Bureau's interpretation of Section 722. It was always recognized that the bulletin would have to be amended in the light of experience. Without going into detail at this time, I would say that the experience of the Bureau has demonstrated that a number of amendments to this bulletin are in order, and it may be assumed that they will be made.

Facts

● When you have the facts you have the answer."

There is no greater error than starting with this assumption.

When you have the facts, you have only the ingredients of the answer.

You must first be sure you have the essential facts. Next you must learn why the facts are what they are. Next what they mean. Finally what needs to be done about them.

Facts are but the skeleton of the body of Truth. Lacking the flesh of reason to give them life, they are only dry bones.—R. O. E. in *Printers' Ink*

You are aware that the Joint Committee on Taxation has recently held hearings on the subject of "Administering 722." Exhaustive testimony was offered, the nature of which varied between a complete condemnation of the Bureau's administration to the more rational view that there was need of modification of existing procedures and on several interpretative points. At this time I am in no position to say what the outcome of this investigation will be, but it is my thought that the revised procedure will be something like this: Section 722 claims will be filed in the future as they have been in the past. These claims will be referred to and investigated by the revenue agent in charge. The taxpayer will be afforded an opportunity for protesting and a discussion of the issues in the office of the revenue agent in charge.

The decision of the revenue agent in charge, whether favorable or unfavorable, will then probably be forwarded to Washington and referred directly to a new committee of from fifteen to twenty-two men, headed by a chairman, this committee to operate under the authority of the Commissioner. I anticipate that this committee will have the final word on the disposition of claims within the Bureau, that reviews by the Audit Divisions and the Office of the Chief Counsel will be eliminated, and that the taxpayers or their representatives will be afforded a hearing before this committee or some member or section thereof. It follows, of course, that this committee will have to be staffed. I assume that this committee will have full authority to revise Bulletin 722 and any rulings which heretofore may have been issued. The taxpayer will still have the right to file his appeal with the Tax Court after a final decision has been handed down by the committee.

Personnel Is Cornerstone

It is my judgment that the revised procedure may be helpful provided that this new committee can be adequately staffed with the type of personnel essential to the job. As a matter of fact, personnel is the crux of this entire matter. To do this job right, it will be necessary for some outstanding lawyers and accountants to serve on this committee as a matter of public duty, for obviously present standards of compensation will not attract properly qualified persons, as probably the top salary for membership on this board will be in the neighborhood of \$8,250.00.

Before closing this subject, I think it is appropriate to state that the present Commissioner shows a highly commendable attitude in his desire to speed up the disposition of relief claims and in his willingness to modify existing procedures.

Just a word as to the status of the work program of the Bureau. The last report of the Commissioner discloses that the Bureau, and in particular the Income Tax Unit, is behind schedule in its investigation of income and excess profits tax returns. The Bureau is not to be criticized for this situation; rather it should be congratulated that the situation is not much worse than it really is, when it is remembered that the Bureau received no favors in connection with performing its war-

time task of collecting swollen revenues. Its personnel was drafted and its recruiting campaigns were materially handicapped by its inability to compete in the labor market with outside industry. Nevertheless, it is of the utmost importance to the taxpaying public that the examination of the war-time tax returns be consummated as quickly as possible in order that a final determination of tax liability may be had so that taxpayers generally may not be confronted in later years with large additional deficiencies as was the case after the First World War in the middle 1920's. The present Commissioner keenly realizes how important it is that the Bureau should attain a current position in its investigations as quickly as possible; and within the limits of appropriations and adequate personnel, this job will be accomplished as quickly as possible.

While quite naturally this group is primarily concerned with matters of taxation as they directly affect public utilities, nevertheless I want to take this opportunity to urge that all of you give special consideration to such problems as the matter of exempt corporations and the special status of citizens residing in community property states. Referring to exempt corporations, their status is defined under Section 101(1) through 101(9) of the Internal Revenue Code. It has been estimated that the Bureau has already ruled as tax exempt approximately 275,000 organizations. There are, of course, a great many organizations which claim exemption whose cases have never been formally ruled on. The type of exempt organization varies from the true benevolent institution to labor unions, publications, foundations, farm-marketing and purchasing groups. It is my earnest belief that too much wealth of this country is being diverted into tax-free channels and that, in any event, the earnest consideration of all citizens is required as to whether exemption should continue to be extended to such large groups.

Time does not permit an adequate discussion of the cooperative movement, but incomplete figures already published by the Bureau

(Continued on page 462)

Controllers Elect Ritenour, Brewer



O. H. Ritenour

O. H. RITE NOUR, controller, Washington Gas Light Co., Washington, D. C., and chairman of the American Gas Association's Accounting Section for 1943-44, was elected to the Board of Directors of the Controllers Institute of America at their annual meeting.

O. W. Brewer, controller of the American Gas Association, was renamed treasurer for the sixteenth consecutive term.

Residential Gas Section

J. J. QUINN, Chairman

WALLACE M. CHAMBERLAIN, Vice-Chairman

F. W. WILLIAMS, Secretary

Residential Committees in Action



Raymond Little

THE second meeting of the House Heating and Air Conditioning Committee of the Residential Gas Section, of which Raymond Little, General Sales Manager of the Equitable Gas Co., is chairman, was held at the Drake Hotel, Chicago, Illinois, on September 9. The meeting was particularly well attended.

Cognizant of the current heating problem including the large consumer demand for gas house heating and the equipment situation, the committee is preparing a comprehensive program specifically designed to assist the industry to control and upgrade local heating business. The opening gun of this program will be the publication of a report entitled "What About Gas House Heating?" which is now being printed and will be sent to all member gas company executives and sales managers. The report will include a factual summary, an analysis of the heating situation, and the committee's recommendations of a number of fundamental factors which must be undertaken by the industry to build a permanent heating load.

Upgrading House Heating

The second phase of the program will be the preparation and distribution of a report devoted to the methods used by representative gas utility companies in controlling and upgrading local house heating business, in addition to sources of material available to local gas companies to achieve this objective.

The committee also plans to prepare a series of information bulletins on the subject of upgrading house heating in addition to the publication of a series of articles for this magazine and the gas trade press.

The Subcommittee on Promoting Summer Air Cooling, under the direction of L. L. Ladewig, Houston Natural Gas Corp., Houston, Texas, also met in Chicago, September 9, to outline a promotional program on summer cooling. Further details of this program will be described in a future issue of the *MONTHLY*.

The Subcommittee on Direct Heating, under the chairmanship of W. H. Lane, Okla-

homa Natural Gas Co., Oklahoma City, Oklahoma, met in Chicago at the Drake Hotel on September 10. The committee reviewed its tentative report on the subject of direct heating which will be mailed to the industry in the near future.

Included with the report will be an information request on the subject, the replies to which will be used as a basis for the committee's final report scheduled for production early in 1947.

A meeting of the Interim Committee of the New Freedom Gas Kitchen Committee was held at Association headquarters, August

21. One of the features of the meeting was the approval of the new-colored sound-slide film entitled "The Flame of Freedom."

At the meeting it was decided that the committee's promotional program, including New Freedom kitchen photographs, blueprint book, architectural sheets, form for preliminary kitchen layouts, presentation folder, in addition to the effective new freedom news letters, should be continued. It was decided to produce a series of New Freedom gas kitchen case studies devoted to the methods utilized by representative gas utility companies in promoting the program.

New "CP" Gas Range Requirements

NEW requirements for automatic gas ranges built to "CP" standards which are created to give the homemaker better cooking performance have been announced by E. Carl Sorby, vice-president, Geo. D. Roper Corporation and chairman of the "CP" Manufacturers Group of the Gas Appliance Manufacturers Association.

The new "CP" requirements go into effect January 1, 1947 when the gas range production rate is expected to exceed by at least 50% the 2,300,000 ranges sold in 1941. Evidence that this production rate can be sold, according to Mr. Sorby, are the millions of new homes that will be built, the 12,540,000 gas ranges in homes that are more than ten years old and need replacement, and the 1,442,500 gain in residential gas customers since 1941.

First requirement for gas ranges bearing the "CP" trademark is that they meet the new more stringent American Gas Association testing laboratories' approval requirements. Other "CP" requirements are aimed at giving the housewife a new and more completely automatic cooking service, savings in food, fuel and time and better cooking results.

All burners, including ovens and broilers, light automatically; ovens are required to preheat quickly, reach high temperatures fast and automatically, maintain temperatures down to 250 degrees; drawers must be quiet operating without undue friction or jamming; effective stops must be provided to prevent tilting and spillage of oven racks;

broilers must be smokeless and provide effective broiling over 80% of the broiler area; more efficient, rust-proof top burners that instantly give all cooking heats from high for quick cooking to simmer for minimum water, vitamin and mineral saving cooking. One top burner must be of a "giant" or over-sized type. Among other requirements are efficiency and burner speed, flush-to-wall construction, oven thermostats, venting away from walls, coolness of outside oven and broiler walls and top surfaces.

Among the optional features which will give the homemaker the widest variety of convenience and performance features available in any cooking appliance for any fuel, according to G.A.M.A., are "automatic" clock controls to turn cooking on and off, 4, 6 or 8 top burners in a variety of arrangements, two ovens, high or low broilers, built-in griddles and deep well cookers, deep barbecue broilers that serve as a second oven, "serve hot" grills, food crisping bins, built-in cooking charts, one-piece top construction, warming closets, towel dryers, glass oven doors, lights in ovens and broilers, swingout broilers, removable oven linings for easier cleaning, radiant broilers, minute minders, incinerator compartments, kitchen heaters, utility storage drawers, and 4-hour oven shut-offs.

The 18 G.A.M.A. gas range manufacturer members who build gas ranges to "CP" requirements represent approximately 50% of the industry's 1941 total gas range production. Additional manufacturers who are ex-

pected to join the program this year will bring "CP" manufacturers' total production to approximately 80% of all gas ranges sold, with a substantial part of this production on top of the line "CP" models.

Aggressive promotion of "automatic gas ranges" built to "CP" standards is being carried on by range manufacturers and gas utilities in national magazine, newspaper, and trade paper campaigns.

Because a gas range bears G.A.M.A.'s "CP" trademark, does not mean that all ranges are alike, and consumers are urged to look for the manufacturer's brand name in addition to the "CP" trademark, G.A.M.A. emphasizes.

Manufacturers who build gas ranges to "CP" requirements and their brand names are:

American Stove Company, Magic Chef; Caloric Gas Stove Works, Caloric; Cribben & Sexton Company, Universal; Detroit-Michigan Stove Company, Detroit Jewel; Garland; A-B; Estate Stove Company, Estate Heatrola; Glenwood Range Company, Glenwood; James Graham Mfg. Company, Wedgewood; Grand Home Appliance Co., Grand; Hardwick Stove Company, Hardwick; O'Keefe & Merritt Co., O'Keefe & Merritt; Roberts & Mander Stove Company, Quality; Geo. D. Roper Corporation, Roper; Standard Gas Equipment Corporation, Oriole; Tappan Stove Company, Tappan; Western Stove Company, Western Holly.

Canadian Manufacturers

Clare Bros. & Company, Ltd., Clare; The Gurney Foundry Company, Ltd., Gurney; Moffats Limited, Moffats.

Regional Gas Sales Conferences

LOOKING forward to the increased production of appliances and the growing need for sales and sales promotion, the Residential Gas Section has completed preliminary plans for the holding of three regional conferences, sponsored by the Section.

The Eastern Natural Gas Sales Confer-

ence will be held in Pittsburgh, Pa., early in February of 1947, with the Mid-West Gas Sales Conference scheduled for the Edgewater Beach Hotel, Chicago, Ill., March 17-18. The New York-New Jersey Gas Sales Conference will be held at the Essex and Sussex Hotel, Spring Lake, N. J., June 23-24.

The conference programs will feature talks on sales, sales promotion, public relations, advertising and other related subjects by well-qualified executives both from within and out of the industry.

"What's Cooking, Boys?"

DON'T be bashful, boys! Step right up and learn to cook a meal that will in the words of a popular song, 'make people's eyes light up and their stomachs say howdy.' Big things are cooking at the Boys' Club these days, literally."

This is the heading of a newspaper publicity article announcing a 3-day cooking school for members of the Boys' Club in Valdosta, Georgia.

Self-participating classes for boys from 12 to 16 years of age were designed to include 8 boys in each class. Several classes were conducted by Lucy Slagle, who was assisted by Dorothy Ayers, both of the Home Service Department of the Atlanta Gas Light Company.

The boys were most enthusiastic in learning to bake and broil, as well as use the top of the range. A group of 30 to 40 boys who would not join the classes because they were afraid of being "sissy," stood on the side lines and became so interested that they begged each day to be allowed to "help."

After two days of broiler meals, vegetable cookery, biscuit making and cake baking, the third day was given over to a review of what the boys had learned. Without any assistance from the instructors, the boys prepared a meal for a group of prominent citizens of Valdosta, who are interested in the Boys' Club. These men insisted they had never eaten a better meal. The boys were also given instructions in setting the table and serving the meal.

Notorious Recipes By Cassidy



MONSIEUR CASSIDY'S Notorious Recipes or Any Damn Fool Who Can Read Can Cook," is the title of an intriguing, humorously written, 16-page treatise by that well-known figure in the gas industry's advertising fraternity, Clayton G. Cassidy, advertising manager of The Peoples Gas Light & Coke Company, Chicago.

Publisher of the treatise is no less well-known—The Cassidy Printery, Wilmot Road, Deerfield, Illinois—"Only print shop in North America with Poolroom and Bar in conjunction." The author's dedication is to "Those Brave Individuals Who With the Stoicism of the Condemned Swallowing a Last Hearty Meal, Ate Some of These Concoctions for the First Time Yet Survived."

The Cassidy opus sells for \$1.00 per copy at the Deerfield address, and all receipts will go to buy cigarettes for hospitalized veterans of both World Wars. (Editor's note: Yes, we paid a dollar for our copy.)

Domestic Gas Research Program Reviewed



Meeting of members and guests of Committee on Domestic Gas Research, F. M. Banks, chairman, at the Hotel Pennsylvania, New York, August 29. At the meeting the domestic research program for the Association year 1946 was checked and reviewed, and the program for 1947 was developed, based on recommendations of the several Technical Advisory Groups.

Industrial & Commercial Gas Section

HARRY A. SUTTON, Chairman

KARL EMMERLING, Vice-Chairman

MAHLON A. COMBS, Secretary

Profitable Publicity

BY ARTHUR Q. SMITH

American Gas Association

THE gas industry has a big stake in promoting the use of gas fuel not only for the countless applications of industry, but also in the broad commercial field which includes wholesale and retail baking, volume cooking, water heating, steam generation and everything else right down to the Chinese laundry.

Progress and load building throughout the gas industry are in direct ratio to the efforts put forward to develop new ideas and to promote to the fullest extent present knowledge and facilities.

There is only one way to sell gas—that is to go out and sell it. There is only one way to keep gas sold—that is to go out and service it and sell additional applications that will be advantageous to the customer.

It sounds simple when put that way as a two-shot proposition and it is as elementary as it sounds. We all know the many intermediate factors entering the picture and there are as many of these factors as there are customers and applications of gas fuel.

Available Sales Helps

Naturally each company is promoting the varied uses of gas within its own territory to the best of its ability. Is each company making the fullest use of the sales helps available? In the trade magazines that your customers and prospects subscribe to in their respective fields, there are many articles that when pointed out to the prospect may have the germ of an idea for a new, or for increased use of gas somewhere in his plant to speed production, to make a good product better, to save labor, to eliminate a disagreeable situation, or to effect economies in production costs. These and other reasons can be the basis for a gas company representative to suggest or advise gas fuel for this or that purpose, citing a certain magazine article as his authority. The customer or prospect will sometimes give more consideration to the printed word in his own trade magazine than he will to a gas salesman's "spiel."

There are many of your customers who read Steel, The Iron Age, Industrial Heating, Restaurant Management, Hotel Management, Institutions, Chain Store Age, and the other publications that carry American Gas Association advertising throughout the year. Full-page advertisements appear each month to promote the utilization of gas in the par-

ticular field covered by that trade magazine.

Are the gas companies making the fullest use of the gas journals with their fine articles on gas utilization? How many gas engineers or gas company representatives walk into a prospect's office with a gas magazine under their arm, open it in front of the prospect, and point out a story that could apply directly to his problem?

It's a good idea. Try it on someone sometime. Some gas companies go to the length of having pertinent articles reprinted so that their entire sales force can each have a copy of a story that will help sell gas. Read your customers' magazines regularly and you'll find lots of items that will fill your "book of knowledge" on gas utilization and that will stand you in good stead when you are on your own. I particularly bring this to the attention of the newcomers in the gas industry—the cadets as it were who are learning this industrial and commercial gas business.

All this help I have been talking about is only one phase of gas selling. It's only a help and it won't sell gas on its own—but I am convinced that this can be one of the biggest assets a gas company representative can have. It's Gas Industry Publicity. I am reminded of the story about the sales manager and the publicity director: "Can you show me," challenged the sales manager, "a single order that publicity ever put on our books?" "I think I can," answered the publicity director, "if you'll first answer one for me: Can you show me a single load of hay that the sun ever put in a barn?"

Is publicity necessary? Is it good?—I know it is!

Industry Information

As much as I question the popularity of the term "publicity" because of its association through common usage with the theatrical, the bizarre, "cheese cake," and stunts which may have their place in this slightly screw-ball world, to my way of thinking, publicity in the gas business is necessary and is good. It really means *industry information*. Information for every one in the gas industry, information for every user of gas,

and information for every prospective user of gas.

Let's think a little bit about this publicity, or industry information. It is a sort of public relations function. In the case of the American Gas Association and particularly the Industrial and Commercial Gas Section, the primary reason for publicity is to acquaint its members with what's going on in the gas business, within the association, the committee activities, the research activities as they apply to industrial and commercial gas, and who's who and doing what in industrial and commercial gas. Publicity, or industry information, is the means of doing a little educating among gas company representatives on how gas is being used and for what. It is also a means of doing a little educating among users of gas and prospective users of gas so that they may consider new applications or new equipment to their advantage. The publicity articles of the American Gas Association have been useful to the entire gas industry, because the A.G.A. is the spokesman for our industry. All well and good but what is this publicity about? There are quite a number of sources from which publicity stories can be developed. Let me list a few.

Sources of Publicity

1. The unusual applications of gas. A use of gas fuel for only one purpose and in only one industry.

2. The case-history type of publicity article. These are really only a greatly expanded A.G.A. national advertisement, most of which are based on case histories.

3. Sometimes an old and time-tested application of gas can be worked into an interesting publicity article if the product has a timely interest. I have just released a story on the applications of gas in the manufacture of Timken roller bearings tying the story to postwar high-speed railroad equipment both freight and passenger as well as motive power.

4. There is always wide acceptance for publicity articles on a popular product. I recently did a short item on aluminum permanent mold casting of pressure cookers. Everybody wants a pressure cooker these days. Then there is another story just released on aluminum die casting, which concerns vacuum cleaners. Many people want vacuum cleaners. A story that had immediate acceptance consisted only of two pictures—one, a billet in a large steam drop forge—old stuff. Then one of those forgings

going into a gas-fired annealing furnace—also old stuff. Now what particular angle do you think appealed to the editors? They happened to be the turbine wheels for jet-propelled planes, the planes in which you will be riding in the not-too-distant future. The billet was heated in a gas-fired furnace, of course.

5. Articles on the maintenance of equipment are always popular. I call your attention to one in the August 1946 Chain Store Age, Fountain Section, which so emphasizes the need for maintenance on commercial cooking equipment that the A. G. A. is having it printed as an eight-page pamphlet. We are having 30 thousand printed and I know you will want each of your commercial cooking customers to have one.

6. Trends in the use of gas in industry always make interesting reading. Perhaps I'm sticking my neck out by saying it, but there is a trend in paint and enamel drying away from direct-fired and so-called infra-red drying, to convection ovens of higher efficiency, safety and lower cost of operation.

7. Any article that can be remotely tied to gas utilization on some special event is another. As an example in Detroit during a bond drive they had a giant torch going 24 hours a day erected in front of the City Hall. This was the symbol of the Victory Loan Campaign.

8. Maybe someone in your community will make a prediction, or a business forecast. Tie it into a prediction for the gas business, a forecast on the future of gas in your own community.

9. Good photographs of gas installations or a process using gas somewhere along the line are always good publicity. Most of the trade magazines have a picture section. A first-class clear photograph with a good caption is sometimes much better than an article that tried to be a feature but flopped by the wayside or got the editor's blue pencil.

10. Companies that maintain research laboratories to develop improvements in their

products and new products are always good for a story by the chief chemist or metallurgist. We are assuming they use gas in their industrial processing.

11. A restaurant that is specializing in one certain dish, or a chef that has invented a new recipe is a story, if they cook with gas.

These are only a few of the sources of publicity stories—I mean industry information articles.

The usual method of presenting this industry information is by means of news releases from the American Gas Association to as many trade magazines as possible in the particular field covered by the story, together with illustrative photographs, charts, curves or whatever is necessary to go with it. Sometimes we get a request from a publication for a story on a specific gas application. This request comes to us because we are the spokesman for the gas industry and are recognized as an authority on that subject.

I have mixed up the logical order of this publicity business purposely by leaving that portion of how the American Gas Association gets the material for these stories and releases on industry information, otherwise known as publicity. I am still talking about industrial and commercial gas publicity. The Association has a publicity director charged with the duty of keeping a continuous stream of articles on gas utilization flowing to trade magazines.

Most of these articles are gotten together by the publicity director himself through field work. There is too much going on in the gas industry for one person to cover all the activities over all of the country. In order to keep up with the demand from the trade magazines for pertinent articles, it

NOTE ON YOUR CALENDAR

A. G. A. Will Sponsor Combined Exhibits at—

National Hotel Exposition, New York, N. Y.—Nov. 11-14

National Metal Congress & Exposition, Atlantic City, N. J.—Nov. 18-22

National Exposition of Power & Mechanical Engineering, New York, N. Y.—Dec. 2-7

Annual Industrial Gas Breakfast during week of National Metal Congress and Exposition—Nov. 20

is to the interest of every gas man to aid and abet that publicity-gathering program to the best of his ability. You gas company industrial and commercial representatives can not only help yourselves, but also your brother gas men throughout the industry by engaging actively in securing publicity articles or information resulting in articles.

I mentioned a few moments ago the sources of publicity material. I only listed those sources that are available to each and every one of you.

You can be of great assistance in making our publicity program more widespread, more diversified and so of greater benefit to all the gas industry. You know the type of articles that are appearing in the trade press, the trade magazines your customers and prospects read. Perhaps you do not agree with a number of things published. Why don't they have an article about thus and so, you say: O.K. tell us about it and we'll see if we can't write one, or have it written. Better yet, write it yourself and send it to us. We'll get it published, that is our business. How about writing up the gas installation of a plant in your territory. Perhaps they are the largest user of gas on your lines. Perhaps they are making some timely or newsworthy product. Perhaps the end use of their product has popular appeal, or goes into a product with news value or appeal. Perhaps they have a novel application of gas, perhaps by the use of gas they have doubled their production. Perhaps they have saved countless dollars through the installation of gas processing. Whatever it is tell us about it.

Here are a few different ways of getting a gas utilization story to us.

1. Write it yourself. If you can write an interesting article and include the necessary technical details, all well and good. If you can't write, or think you can't, just write us a letter as if you were telling us about the job over a lunch table. Send us all the facts. We will turn out a story. Pictures also, of course. If your local gas company has a photographer, have him take the pictures from the angle you want to illustrate what you are writing about. Quite often the plant

Map Industrial Advertising Plans



Present at conference on Industrial and Commercial Gas National Advertising were: seated left to right, J. P. Leinroth, Public Service Electric and Gas Co., Newark, N. J.; F. T. Brooks, Philadelphia Electric Co.; F. B. Jones, Equitable Gas Co., Pittsburgh. Standing, left to right: M. A. Combs, A. G. A.; Emil Hofsoos and A. C. Evans, Ketchum, MacLeod & Grove Inc.

itself will gladly supply photographs.

2. Get the plant engineer, chief chemist, metallurgist or even the boss to write the story. He will have his "by line" on it. A story has better acceptance value when written by an authority in that particular industry. Insist on pictures.

3. Only as a last resort when all other methods have failed, and you have a "bang-up" story that you know the gas industry is waiting for, send an S.O.S. to A. G. A. and we will get the story for you somehow.

It's stories we want from anywhere, about anything, as long as it's gas. You will want those printed stories, too, to put in your brief case, to help you sell gas. There must be any number of story possibilities in your territory. The past war years have witnessed a revolution in production techniques, and naturally where heat entered the picture gas fuel shared in those changes and developments which brought us to peak efficiencies in the production of war goods. On the commercial cooking and baking phases of the gas industry, the accomplishments were something to marvel at. With no new equipment to replace worn out and obsolete appliances there were more goods baked and more meals served outside of homes than ever before in the history of the industry. That was a tribute to the manufacturers of the equipment and to the flexibility of gas fuel to make it possible for the great increase in cooking output without any additional equipment. It is also a tribute to these commercial gas customers who did such a fine job in spite of food shortages and lack of personnel.

New Products, Too

Postwar production must feel the results of these new techniques that were war-developed. What is there in your territory that has had production greatly enhanced by the application of a war-developed technique? What new civilian products are coming on the market as a result of some war development? Nothing to write about? It will take years before it could all be told, but in the meantime, let us hear about a little part of it.

There is scarcely a manufactured item that does not have a heat application somewhere along the processing line from crude ore or metal to the final finish. Gas fuel must be used somewhere for this heat application and will continue to be the dominant fuel because of its cleanliness, controllability, flexibility and economy.

The trade magazines are the "Bibles" for each particular industry and the trade press editors are very receptive to gas industry publicity articles because over the years the A. G. A. has supplied them with authoritative editorial material that has been eagerly read by their subscribers, and they wish to maintain their editorial prestige before their readers by using material disseminated by the spokesman for a major industry. You men are the voice of the gas industry and the A. G. A. the medium to route that collective voice and the collective intelligence of gas

"know-how" through the channels where the gas industry will reap the greatest benefits.

Now where does all this publicity material lead us? More people know more about the application of gas fuel. You have more ammunition to fire at your prospects. You will have the printed word in responsible national trade magazines to back up your sales talk. So with the more publicity we can get for the gas industry, the better selling job you can do and the more gas your company can sell. Let us not hide our light under a bushel. Bring your gas jobs out in the open through the medium of the American Gas Association gas industry information and publicity service.

A. G. A. Exhibits Ready

THE American Gas Association's Industrial and Commercial Gas Section will sponsor combined exhibits at two national expositions this year.

There will be a Combined Commercial Cooking Exhibit at the National Hotel Exposition, Grand Central Palace, New York City, November 11-14. Eight manufacturers of commercial cooking appliances will exhibit their latest equipment.

At the National Metal Congress and Exposition in the Public Auditorium at Atlantic City, November 18-22, the first postwar A. G. A. Combined Industrial Gas Exhibit will be the largest single exhibit. Manufacturers of industrial gas equipment have had attractive displays designed to show off their latest equipment, and it will be well worth the time of industrial gas men who plan to be in Atlantic City that week to visit this exhibit.

The respective committees in charge of these two national expositions have approved the final designs of the exhibits for both expositions and they are now under construction. The equipment to be displayed and the exhibits themselves are the most imposing of any of the past shows. All in all these two national expositions promise to be milestones in gas industry activities.

New Data on

Metal Melting

NEW descriptive literature on gas-fired immersion melting equipment, including five specification tables and discussions of the theory and technical characteristics of the process, has just been issued by The C. M. Kemp Mfg. Co., Baltimore, Maryland.

The bulletin (No. IE-10) is printed in two colors, contains 19 photographs and diagrams, gives dimensions, consumptions, plate melting rates, capacities and shipping weights. In addition to the catalog section, there is a buyer's check list for use in selecting equipment, and an analysis of current melting methods and their relative performances. Stereotype, electrolyte, remelt and job installations are covered. Testimonial matter on fuel costs, temperature and dross control, up-keep, working conditions and convenience, gives valuable field evidence.

gas grapevine



We note in a recent issue of "Hotel Bulletin" that John W. McNair, vice-president of Standard Gas Equipment Corp., Baltimore, received the Brand Names Research Foundation golden and centennial "Certificate of Public Service" in recognition of 116 years' continuous service of the brand name "Acom" and 51 years' service of "Vulcan." Congratulations!

Reports from "grapevine" scouts indicate that our section luncheon on October 8 in Atlantic City will be a *sell-out*. Better get your tickets early boys if you want to hear Dexter Keezer tell us what it's all about.

Without gas fuel for precision heating, it would be an awful job to make television tubes, according to a story sent out by your Section publicity department. It certainly is marvelous how gas has been applied to automatic machines handling glass for the many operations of mounting and sealing elements in cathode ray tubes.

John Bourke, our director of commercial gas cooking promotion, has been travelling. Just back from a month's trip up and down the Pacific Coast, he says the commercial boys out there are augmenting their staffs and making big plans for promotion as soon as that happy day arrives when they can get some equipment to work with.

Ye scribe has been doing a little travelling himself and will certainly be glad when those luxurious new railroad sleepers are put in service with Timken roller bearings. We watched them being made in their large plant in Canton, Ohio, where gas is used for every operation requiring heat. We know those bearings will contribute a lot to riding comfort and safety—and gas has a very large part to play in their manufacture.

We made another stop and were amazed to see the extensive use that is made of gas fuel in the manufacture of Hoover vacuum cleaners. Row upon row of gas-fired aluminum die casting machines are turning out thousands of precision cast parts. Then enormous gas-fired paint curing ovens put the finishing touches on this much-needed household item.

After many months of crying on the mechanical department's shoulder, we finally got the shift key fixed on our ancient vintage typewriter. It's easier to read now? A. Q. S.

Technical Section

LESTER J. ECK, Chairman

C. S. GOLDSMITH, Vice-Chairman

A. GORDON KING, Secretary

Installation Standards for Plastic Pipe

same in Gas, Oct. 46. p 40-47

BY S. A. BRADFIELD

Southern California Gas Co.,
Los Angeles, Calif.

FACED with an impending war-time shortage of steel pipe, the Southern California Gas Co., like many other members of the gas industry, began in 1942 to search for possible substitutes. The growing acceptance of plastic materials for various purposes in industry lead to a series of preliminary investigations of this type of material for use in lieu of steel service pipe.

After consideration of a number of different types of plastic material, it was decided to conduct further preliminary experiments on one type of tubing fabricated locally from cellulose acetate butyrate, known commercially as Tenite II, which, it was learned, might soon be available in usable quantities at a price comparable to that of steel pipe. The selection of this particular material for further consideration was based not only on price and availability, but also on the fact that it is light, easy to handle, and could readily be joined together in the field.

The preliminary investigation of this material which was begun in 1942 was divided into four phases: (1) Experiments made to determine a proper method of application of the material to the construction of gas services, (2) Use tests made by the operating departments to further determine proper field practices, (3) Laboratory tests to determine whether the physical and chemical properties of the material were such as to render it suitable for gas services, and (4) Soil tests made to determine whether the material would stand up when buried in various types of soil.

I. Application Experiments

The preliminary work, as outlined, which was under the general direction of B. M. Laulhere and was conducted by J. T. Corteloy and D. C. Hill, included the development of a method of joining the plastic tubing to existing metal piping and a method for making field joints in the plastic tubing itself.

In early test installations, a simple plastic-to-steel connection was shop fabricated. This connection (Figure 1), which consisted of a reamed nipple with a tapered steel insert, has since been replaced with a flare compression fitting which is available commercially (Figure 2).

[Presented at the 53rd Annual Convention of the Pacific Coast Association, San Francisco, September 10-12.]

Two types of plastic-to-plastic field joints were originally considered. One of these was made by using plastic sleeves of 1" internal diameter which slipped over the two ends of 1" O.D. plastic tubing (Figure 3). Acetone was used as a sealing agent between the sleeve and the inserted tubing. The other

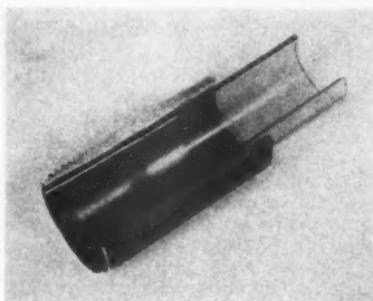


Fig. 1. Original steel-plastic connection

type of field joint was made by bellng one end of the plastic tubing and inserting the unbellled end of the adjacent piece of tubing into the bell (Figure 4). Acetone again was used as a sealing agent. The bellng of the plastic tubing was accomplished by inserting the end of the tubing in hot water and then pressing it firmly over a mandrel.

The sleeve type connection has proved to be somewhat stronger and generally more acceptable than the bell and spigot joint. Standard installation practice now calls for sleeve joints not only because of their greater strength, but also because no hot water and no special tools are required on the job. The sleeves can easily be made in the shop or in the field by simply sawing off short lengths of 1" I.D. tubing with a hacksaw (Figure 5).

II. Use Tests by Operating Departments

In order to determine the adaptability of the material to field use, a 1 1/4" steel service 38' long was first installed. Instructions were then issued to a field crew to replace this

service by the insertion of plastic tubing, using the old service as casing. The instructions also called for an extension of the service with plastic pipe to a total length of approximately 72'. Both sleeve and bell and spigot joints were employed in this installation and the connections to the service tee and to the steel service riser were made by means of fittings similar to that shown in Figure 1. The men who made the installation were asked to comment as to whether they considered plastic pipe acceptable for use as gas services. They were invited also to offer suggestions and comments which might lead to the most successful adaptation of this material to service construction work. The comments indicated their feeling that the use of the material was practical, but all pointed to the fact that because of the softness of the plastic, it might be undesirable to insert the tubing through old steel services where burrs or welding icicles were likely to exist.

After the test service was installed, it was filled with gas to a pressure of 30 p.s.i. and a recording gauge was installed. The charts indicated no appreciable loss in pressure over a 7-day period.

III. Preliminary and Laboratory Tests

In order to determine the physical properties which might have a bearing on its use for gas services, samples were delivered to a materials testing laboratory and tests were conducted to determine its tensile strength and its strength against bursting, crushing, bending and general abuse. Results of these preliminary tests indicated an ultimate strength in tension of approximately 5,000 p.s.i. at 84° F. The test specimens generally withstood hydrostatic tests in excess of 600 p.s.i. at 80° F. and approximately 380 p.s.i. at 130° F. When crushed between two 3/4" diameter bars, 12" specimens required approximately 270 lbs. to close at 84° F. At a tem-

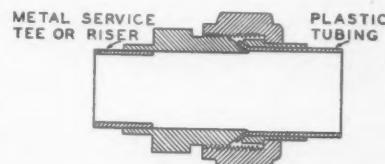


Fig. 2. Compression fitting



Fig. 3. Preparing sleeve joint



Fig. 4. Preparing bell and spigot joint

perature of 85° F. the specimens generally withstood bending around a 23" diameter mandrel but buckled on a 20" mandrel. At 20° F. specimens shattered when hit flat on top and kinked when hit on a sharp edge. At 160° F. specimens would not shatter, would kink if hit on a sharp edge, and could be hammered flat without breaking. Since the range of ground temperatures in the Southern California area is generally between 50° and 70° F., and since there is little likelihood of services being subject to sharp impact, it was felt that the results of these tests indicated that the plastic was physically adaptable for service installations.

Chemical tests were also conducted at this time to determine the effects of various solutions upon the plastic material. 12" samples of plastic pipe were immersed in eight different chemical substances for a period of 19 days. The samples were then removed, dried and any change in weight was noted. After the samples had stood for 30 hours, their change in weight was again noted and they were subjected to tensile tests. The eight substances in which the samples were immersed were:

- (a) Lubricating oil
- (b) Absorption oil
- (c) 1% solution of hydrochloric acid
- (d) 1% solution of sulfuric acid
- (e) 20% solution of calcium chloride
- (f) 10% solution of sodium chloride
- (g) Natural gas saturated with natural gasoline
- (h) Natural gas saturated with Calodorant

Each of the last two tests was made by wiring the sample in the middle of a sample bomb made of 2" pipe, placing a small pool of natural gasoline or Calodorant in the bomb and filling the bomb with natural gas. The pool of liquid did not touch the plastic tubing but the gas surrounding the sample was saturated with the vapors of the liquid. Natural gas saturated with Calodorant and

natural gasoline both seemed to cause an appreciable change in weight in the test sample, Calodorant having the greater effect. Since, however, the concentration of Calodorant in the bomb was approximately 1,000 times that in gas normally supplied through services, it was felt that the apparent effect on plastic could be disregarded. This consideration has been borne out in later tests performed on services through which gas has passed for a period of approximately three years without any apparent effect on the physical properties of the tubing. In the light of these tests, however, our policy restricts installation of plastic services to areas where there is little likelihood of contact with refinery gases or high concentrations of mercaptans.

IV. Soil Tests

In order to determine how plastic pipe would stand up in service underground, approximately 2,200 feet of the material, both plain and jointed, was buried in soil beds of three principal types of soil found in this area: sand, loam and adobe.

In each of these general types of soil, samples were buried in two different beds, one of which was maintained in a naturally dry condition and the other of which was kept perpetually wet by means of a sprinkling system. Samples were also buried in a sand bed in which the sand had been thoroughly oiled and in which the pieces of plastic pipe were wired to a storage battery which maintained a potential of six volts on the test samples with respect to the soil. Sufficient samples were buried so that one could be dug up from each bed and tested every six months for a period of approximately three years.

This test has been completed and the results indicate that only in the oil saturated sand has there been any appreciable deterioration of the material.

In the light of the preliminary investiga-

tions which were begun in 1942 and were completed this year, it was decided that the plastic tubing under consideration was adaptable for service installation work. A number of plastic services were installed during the latter part of 1945, and this year with the steel situation still critical, several crews have been assigned to the installation of plastic services in selected areas. Before beginning any formal program for the installation of plastic services, it was considered necessary to adopt procedure standards and to obtain on the open market fittings which would replace the homemade connections formerly used. With this end in view, a rather detailed investigation was made in our laboratory. T. H. Gilbert has covered this investigation in his paper entitled "Plastic Tubing for Gas Service Piping."

Following the conclusion of the final laboratory investigation, a number of general rules were adopted relating to the installation of plastic tubing for gas services. These general rules included the following fifteen items:

1. Type of Service

"Plastic tubing will be used for domestic standard services only. Branch services will not be connected to a plastic service."

The decision to use plastic for domestic standard services only was based on a desire to limit to a single size, the tubing and fittings in use at the present time. Because of the difficulty of obtaining fabricated plastic fittings such as T's, and the undesirability of increasing the number of steel-to-plastic connections in a given service, it was considered impractical to attempt currently the installation of branches from plastic services.

2. Pressure

"Plastic services may be used on pressures not to exceed 30 lbs. per square inch."

Although plastic joints and tubing have

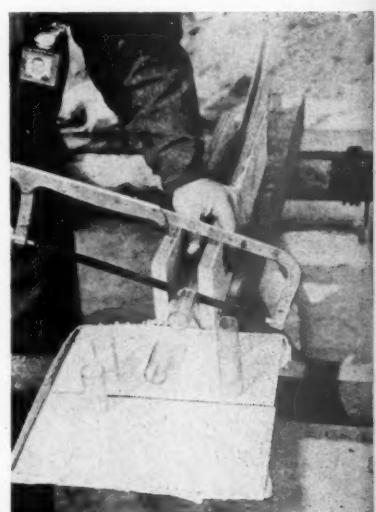


Fig. 5. Cutting plastic sleeves

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were subjected to much higher pressures and have successfully withstood the tests, it was felt desirable to limit the pressure to insure an adequate factor of safety.

3. Soil

"Plastic services will be installed in mild soil areas only. Installation of plastic services should be avoided in extremely rocky areas."

The decision to use plastics in mild soil areas only resulted primarily from the difficulty encountered in applying a protective shield to the coating at the plastic-to-steel joint. Since plastic softens materially with heat, hot asphalt cannot be used to protect the steel connection. A grease coating is therefore used which is protected only by two wraps of cellulose acetate and a shield wrapping of Kraft paper.

It was considered desirable to avoid the installation of plastic tubing in rocky areas because of the fact that in compacting the backfill, rocks might lie against the tubing and eventually cause a partial closure.

4. Coating

"Main and service tees will be coated with a grease coating, two wraps of cellulose, and Kraft paper to protect cellulose and grease during backfilling operations. Hot asphalt will not be used."

5. Identification

"A brass ring will be installed at the stop cock on all plastic services."

In order to provide identification for future operation and maintenance, it was felt desirable to mark in the field, each plastic service which was installed. Since it has been common practice to use a yellow harness ring to mark services to which branches are connected, a different kind of a ring is used to differentiate between plastic and branch services.

6. Riser

"The riser will be of copper, connected to the plastic pipe by means of a compression-type mechanical fitting."

By the use of a copper riser with a brass compression fitting attached, the necessity for coating the metal-to-plastic connection is avoided.

7. Protection to Service Riser

"The plastic-copper joint at the riser connection should be blocked securely on the sides to avoid kinking of the plastic material until the backfill is well compacted. Wood scraps, or similar material will provide the necessary rigidity."

8. Service Connection

"Service connection to main may be either the welded or mechanical-type connected to the plastic pipe by means of a compression fitting."

9. Pipe Joints

"Pipe joints will be made with a 1" I.D., plastic sleeve over the 1" O.D. plastic pipe, sealed with plastic pipe joint cement."

The plastic pipe joint currently in use is a solution of the plastic material in acetone with a coloring material added to provide for visual inspection of the joint. It has been found that a better joint can be obtained by using this material than by simply painting the ends of the tubing with acetone.

10. Service Location

"Particular care must be taken to secure and record clear and accurate service loca-

tions because of the fact that pipe locators will not locate the plastic pipe."

11. Boring and Jetting

"Plastic pipe will not be used for boring or jetting."

The reason for this restriction is the obvious lack of rigidity of the plastic material.

12. Curb Valves

"Curb valves may be installed in plastic services using compression-type fittings for connection."

The same method is used to connect curb valves to tubing as is used with copper services, i.e., extra heavy T.O.E. nipples extend

Standard Methods	Southern California Gas Company Distribution Training Department Job Breakdown Sheet	Index: 1550.1-A Page: <u> </u> of <u> </u>
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Operation: Fabricate Plastic Pipe Sleeve Joint (Relates to Standard Practice 1550.1)

Equipment Used: Blue Paste #1, 1/2" Brush, Clean Rag, and Acetone for Cleaning Brush and Thinning Blue Paste

<u>IMPORTANT STEPS</u>	<u>KEY POINTS</u>
1. Remove all grease and dirt from inside of sleeve and outside of plastic pipe or nipple with clean rag.	1. Joint must be thoroughly cleaned.
2. Apply paste to one-half of the inside surface of plastic sleeve.	2. (a) Use paste generously. (b) Apply as quickly as possible. (c) Do not leave voids when applying paste, cover completely. (d) Keep all matches or flames away from Blue Paste #1 or Acetone as both are highly inflammable.
3. Apply paste to outside of plastic pipe or flared nipple at the end to be joined.	3. A distance of two inches.
4. Insert end of plastic pipe or nipple straight into plastic sleeve, approximately one-half the length of the plastic sleeve.	4. (a) Do not twist. (b) Joint must be made immediately after paste has been applied due to its setting up rapidly.
5. Apply paste to second half of the inside surface of plastic sleeve.	5. Same as Step 2.
6. Apply paste to outside surface of second pipe end to be joined.	6. Same as Step 3.
7. Insert end of plastic pipe or nipple straight into plastic sleeve until it butts up to first plastic pipe end.	7. Completed joint should not be disturbed for about five minutes.
8. Wipe off excess paste with rag.	9. Use Acetone.
9. Clean brush.	10. (a) Test in same manner as steel pipe joints. (b) Use 25# or main pressure, which ever is greater. (c) Use 3/4" safety expansion plug to stop end of pipe.
10. Test joints.	
11. If joint leaks, cut out entire joint.	

SHOW WELL DEFINED LOCATION OF SERVICE ON SERVICE ORDER--
PLASTIC SERVICE CANNOT BE LOCATED WITH PIPE LOCATOR

Figure 6

from the inlet and outlet of the curb valve through the edge of the valve box or casing. In case of plastic installations, these nipples are terminated by compression-type fittings at the outer ends through which plastic-to-metal connections are made.

13. Service Bends

"Plastic pipe may be curved gradually as it approaches the riser location in lieu of a service bend. When right angle bends are required, the prefabricated plastic service bends will be connected to the pipe with sleeve joints."

14. Abandoning

"Plastic services will be abandoned at the main except where a curb valve has been installed, in which case the service may be cut at the valve and the valve plugged."

15. Standard Practices

"In general, specifications as outlined in Standard Practices for the construction of steel or copper services will be applied where plastic pipe is used. The details listed above include the more notable exceptions.

Training Program

As installation techniques were developed in the laboratory, booklets were prepared in which were included the general instructions outlined above, as well as job breakdown sheets showing in detail the important steps and points to be watched in making plastic sleeve-type joints to connect plastic tubing to service tees or copper service risers. (Figures 6 and 7.)

After the development of techniques had been completed and the booklets prepared,

district foremen and other interested supervisors met at the laboratory for a demonstration of the operations. Following this demonstration, the foremen themselves went through the procedures outlined in making and testing sleeve connections and installing compression fittings. Booklets were then distributed to the district foremen for their use in training individual crews in the installation of plastic services.

In order to determine how effective the training had been, representatives of the distribution training department and operating supervisors later spot-checked a number of service installations to see if standards were being followed and if any changes in instructions were necessary. To date few modifications of the original outlined procedures have been found desirable.

Advantages of Plastic Pipe

Although no wholesale program for the installation of plastic services in lieu of steel or copper has as yet been necessary, several hundred installations have been made. The experience gained from making these installations indicates certain advantages in the use of plastic over the use of steel. The more apparent advantages may be listed generally as follows:

A. Plastic services are more easily field fabricated than are steel services. It has been found that with very little training, men can easily make the sleeve-type joints. Service tee and riser assemblies, as delivered to the field crews, now include attached compression fittings with 9" flared plastic nipples, to which the remainder of the service can be connected with sleeve joints, eliminating the necessity of fabricating any plastic-to-metal connection in the field.

B. If a mechanical service tee is used instead of a welding tee, there is no necessity for a welder to be included in the line up of a crew laying plastic services.

C. Plastic material is very light in weight. The entire length required for an average service can easily be handled by one man.

D. The necessity for protecting joints other than that at the service tee is eliminated. By using a grease coating with cellulose and Kraft paper to protect the service tee connection, the necessity for the use of hot asphalt with its attendant hazards and time-consuming heating process is eliminated.

In any analysis of the comparative merits of metal and plastic services, it is only fair that we also list the apparent disadvantages of the latter.

1. The principal difficulty which has so far been encountered in the use of plastic has been in obtaining a proper fit between sleeves and inserted tubing. Both the 1" O.D. and 1" I.D. tubing have been found to vary in diameter as much as plus/minus 10/1000 inch. This variation in size often results either in joints so loose that voids are not completely filled by the sealing agent, or so tight that the sealing compound is scraped off in making the connection. In some cases the variation has been so great that it was impossible to insert the tubing in the sleeve.

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Operation: Connect Plastic Service to Steel Service Tee or Service Riser.
(Relates to Standard Practice 1550.1)

Equipment Used: Crescent Wrench, Hacksaw, Rule, Blue Paste #1, 1/2" Brush, and Clean Rag.

<u>IMPORTANT STEPS</u>	<u>KEY POINTS</u>
1. Remove union nut and metal compression ring from service tee or riser assembly.	
2. Cut plastic service to length.	2. (a) Use hacksaw with fine tooth blade. (b) Cut straight.
3. Install metal compression ring on plastic nipple. (Flared one end)	3. Flared end of compression ring to contact flare on plastic nipple.
4. Install union nut on plastic nipple.	4. Threads in union nut toward flared end of plastic nipple.
5. Join plastic nipple to plastic service. (See breakdown "Fabricate Plastic Pipe Sleeve Joint".)	5. Completed joint should not be disturbed, or connected to fitting for about five minutes.
6. Connect union nut to fitting on service tee or service riser.	6. (a) Do not apply dope to union nut or fitting threads. (b) Use Crescent wrench. (c) Tighten union nut snugly, yet not excessively. (Plastic flare will break if nut is tightened to excess).
7. Install a "Plastic Service Identification Ring" at the stopcock on the service riser.	

Figure 7

In order to overcome the difficulty, it is at present necessary to use a special pipe sizing tool in the field. By forcing the end of the tubing between the inner and outer shells which have been previously heated by dipping in hot water, a proper diameter is obtained. It is hoped that fabricators of plastic tubing will, in the near future, be able to hold the diameter of extruded tubing within a much closer tolerance, say plus/minus 3/1000 inch.

2. The plastic material is soft and easily cut and does not withstand rough treatment from picks and shovels. Since, however, services are normally laid approximately 18" deep across the customers' premises, and since this is below the depth of normal cultivation on the property, we do not anticipate that a great number of services will be broken or cut by garden tools. To our knowledge, only two plastic services so far have been damaged in this way. Both of these were broken by workmen constructing other pipelines crossing the services.

3. The possibility of fatigue or flowing of the plastic material at the compression fittings has been considered. As yet there has been no evidence of any leakage or deterioration of a service from such a condition.

The ultimate life of plastic service pipe is still a matter of conjecture. From three years of observation, however, it is considered likely that under proper conditions, plastic will last at least as long as steel. Its installed cost compares favorably with that of steel. In the light of nearly four years' experience, we feel that after minor difficulties have been overcome, plastic is a highly satisfactory substitute for metallic service pipe.

Propane-Air Plant To Be Built

STACEY DRESSER ENGINEERING of Cleveland, division of Stacey Bros. Gas Construction Co., has been awarded the contract to design and install a propane-air gas plant in Albany, Georgia. It will produce 312,000 standard cubic feet per day of 550 B.t.u. propane-air gas and the plant is designed at other lower capacities so as to meet variable peak winter load requirements. Complete unloading and liquified propane storage facilities will be provided.

Appliance Regulators

THE Pittsburgh Equitable Meter Division of Rockwell Manufacturing Co. has introduced a complete new series of appliance burner pressure single valve regulators. Designated as Rockwell-Emco Appliance Regulators and made of a special aluminum alloy, weighing one-third as much as iron, which is non-corrosive and durable, this line is attractively finished with a protective coating of neutral grey lacquer. The light weight makes possible marked savings in shipping costs and affords more ease of handling.



Laboratories

GEORGE E WHITWELL, Chairman

R. M. CONNER, Director

New Standards Approved

ADDENDA to American Standard Approval Requirements for hotel and restaurant ranges and unit broilers and for hotel and restaurant deep fat fryers, consisting chiefly of additions to cover approval under conditions of high altitude, have been submitted to the American Standards Association for approval as American Standard.

Adopted by the A. G. A. Approval Requirements Committee, they go to the A.S.A. Board of Examination for recommendation to the Standards Council on Approval.

Russians Visit

L. A. Laboratories

THROUGH arrangements made by the Pacific Coast Gas Association and the Federal government, several Russian gas engineers and their interpreter visited the Los Angeles Laboratories of the A. G. A. during August.

One of the visitors previously had gone through the Cleveland Laboratories. While in Los Angeles they also visited several appliance manufacturing plants and utility companies, inspecting production and distribution facilities as well as testing and research activities of the Laboratories.

A. S. A. Honors

Laboratories

HONORING the work of the American Gas Association Testing Laboratories in the development of standards for Army and Navy equipment and procedure, R. M. Conner, director, recently was awarded a certificate of recognition by the American Standards Association.

As a member of the war committee of the association, Mr. Conner attended an award dinner at the Officer's Club of the Brooklyn Naval Yard on August 14, at which time the certificate was presented.

Speakers were Rear Admiral F. E. Haerle, Commander, New York Naval Ship-

yard; Rear Admiral Charles A. Dunn, supervisor inspector, Naval Materiel; Brig. General Donald N. Armstrong, former commandant of the Industrial College of the armed forces; Henry B. Bryans, president, American Standards Association; and Howard Coonley, chairman, Executive Committee of the A.S.A.

The association and its war committee members were honored for aiding in the simplification of products, promoting interchangeability of repair parts, and sponsoring better procedures and higher standards of manufacture through war standards, which resulted in the savings of time, money and material and greatly contributed to the Allied victory.

IN RECOGNITION OF SERVICES FREELY GIVEN IN ORDER TO MEET A NATIONAL NEED THROUGH THE DEVELOPMENT OF AMERICAN WAR STANDARDS/ THIS CERTIFICATE IS AWARDED TO
R.M CONNER
ONE OF THE MEMBERS OF THE WAR COMMITTEES OF THIS ASSOCIATION WHOSE DEVOTED LABORS HAVE SERVED GOVERNMENT, MANAGEMENT AND WORKERS WELL. THEIR WORK HAS BEEN SIGNALLY HONORED BY THE ARMED FORCES, AND IS GRATEFULLY ACKNOWLEDGED BY THE AMERICAN STANDARDS ASSOCIATION.

*CHM Bryans
R.M. Conner
H. Coonley
H. Armstrong*

Laboratories' Picnic

HCARL WOLF, managing director of the American Gas Association, was the guest of honor at the twenty-first annual picnic of the Laboratories, held on August 23 at Pine Ridge Country Club in Cleveland. It was Mr. Wolf's first opportunity to mingle at leisure with members of the staff.

Golf, baseball, games, a buffet supper and dancing in the evening featured the festivities. The picnic was arranged by Chairman Milton Zare and a committee consisting of William R. Willis, Winifred Anderson, E. L. Bangert and Norma Steinbrenner.

Members of the research department trounced testing players 16 to 9 in the ball game and F. R. Wright carried away the golf honors.

Bernhardt Joins Grand

STANLEY C. BERNHARDT has been elected vice-president and sales manager of the Grand Home Appliance Co., division of the Cleveland Cooperative Stove Co., Cleveland, Ohio.

Personal and Otherwise

R. W. Camp Appointed To Vice-Presidency

THE Board of Directors of Consolidated Gas Utilities Corp., Oklahoma City, Okla., has announced the election of Richard W. Camp as a vice-president of that organization.

Associated with Consolidated Gas Utilities since June 1928, Mr. Camp was in charge of the Geological and Exploration Division.

Walter E. Caine Appointed Secretary



Walter E. Caine

APPOINTMENT of Walter E. Caine as secretary of the Accounting Section of the American Gas Association has been announced by H. Carl Wolf, managing director, effective October 15. He will succeed O. W. Brewer, who will devote his time entirely to the increasing duties of auditor and supervision of the Association's accounting staff.

Mr. Caine will continue to head the Bureau of Statistics. His title will be director of Bureau of Statistics, and in addition, secretary, Accounting Section.

Mr. Caine joined the American Gas Association in September, 1944, when he took over the direction of all activities of the Statistical Department. He entered the public utility field directly after graduation from Northwestern University, when he was employed by the State of Wisconsin in 1931-32 to supervise the collection of statistical and other material relating to power resources of the State. From 1932 to 1938 he was associated with the Public Service Commission of Wisconsin, first as junior case investigator and finally as senior rate analyst in the Department of Rates and Research.

In the fall of 1938, after passage of the Natural Gas Act, Mr. Caine joined the Fed-

eral Power Commission Staff as rate analyst in the Division of Rates and Research. During 1939, he was loaned to the Department of the Interior to prepare recommendations in connection with Bonneville's rate schedules, and, in 1940, to the Twentieth Century Fund as associate director of its survey of the electric light and power industry.

Upon his return to the F.P.C. in 1941, he was appointed assistant chief of the Division of Rates and Research, where, during the war period, he supervised the review and negotiation of electric power contracts for all Federal war agencies. During part of that time he was on loan to the War Production Board as chief of the Negotiations Section.

Bryant Representatives

APPOINTMENT of Malcolm McLean and Raymond A. Bissell as district representatives of the Bryant Heater Co., Cleveland, in the New York area has been announced by James Crawford, sales manager.

Mr. McLean was previously connected with the Westchester Lighting Company.

A graduate of Lafayette College, Mr. Bissell was for 14 years district house heating supervisor of the Brooklyn Union Gas Company.

Appointment of Homer A. Size and Arthur X. Nelson as representatives of the division in the application of Bryant gas combustion elements to industrial and process heating equipment, has also been announced by D. A. Campbell, manager of the Industrial Division of the company. Mr. Size will represent the division in California and Mr. Nelson, operating Plant Equipment, Inc., will serve the Minneapolis area.

Mr. Size was formerly associated with the Michigan Consolidated Gas Co., as industrial engineer and with Bohn Aluminum & Brass Company. For the past two years he has been partner and manager of Immersion Heating Equipment Co. of Los Angeles, which association he will continue in addition to serving as Bryant representative.

A native of Minnesota, Mr. Nelson has just completed three years with the Navy and previous to that time was associated with the Minneapolis Gas Light Co. as industrial engineer.

J. C. Jordan Retires

J. C. JORDAN, vice-president and general manager, Rio Grande Valley Gas Co., Brownsville, Texas, retired from that company as of August 31. A dinner was given in his honor several days before his retirement, at which time an inscribed silver table center piece was presented to him from the members of the company.

Mr. Jordan is succeeded as general manager of the company by L. O. Vogelsang of San Antonio. Mr. Vogelsang served in World War II as a colonel on the staff of the Eighth Service Command at Dallas.

Consolidated Promotion



Frank J. Bischoff

FRANK J. BISCHOFF, who has been controller of Consolidated Edison Company of New York, Inc., for the past twenty-three years, was elected a vice-president of the Westchester Lighting Company, part of the Consolidated Edison System, on September 10.

Charles E. Eble was elected controller of the Consolidated Edison Company and was also appointed controller of the New York Steam Corporation. He was formerly senior assistant controller of Consolidated Edison.

John V. Cleary was appointed senior assistant controller of Consolidated Edison and will be in charge of the company's general accounting department.

It was also announced by the company that Arthur E. Hald will become auditor on October 1.

He will take the place of Reuel O. Launey, who plans to retire on that date under the company's age rule. Mr. Hald has been manager of the auditing department since 1941.

B. S. Rodey, associate controller, has been put in charge of the company's tax department.

Mr. Bischoff has been with the Consolidated Edison System since 1903. He held various positions in the accounting department of the company. In 1918 he enlisted for military service in World War I. He was elected controller of the company in 1923 and controller of New York Steam in 1943.

Mr. Eble joined Consolidated Gas Company as corridor boy in 1916. He was appointed assistant controller in 1935 and senior assistant controller in 1936.

Named Purchasing Agent

FANK M. REINHOLD of Watertown has been named purchasing agent for The Connecticut Light and Power Co. to succeed H. S. Platt, whose retirement from the company became effective September 1.

Mr. Reinhold has been employed by The Connecticut Light and Power Company since 1923. A veteran of both world wars, Mr. Reinhold accepted a commission as a Lieutenant in the U. S. Navy during World War II and served with the Navy Department in Washington. He is Commodore of Mattatuck Council, Boy Scouts of America.

Mr. Platt, who lives on Guernseytown Road, Watertown, had been Purchasing Agent for The Connecticut Light and Power Company since 1917.

Ruthenburg Appointed To Labor Advisory Group



Louis Ruthenburg

LOUIS RUTHENBURG, president of Servel, Inc., Evansville, Indiana, has been appointed to the Labor-Management Advisory Committee of the United States Conciliation Service.

Mr. Ruthenburg was selected by the United States Chamber of Commerce to succeed David Saroff, president of the

Radio Corporation of America, who resigned.

Announcement of the appointment of Servel's president was made by Edgar L. Warren, director of the United States Conciliation Service.

Gabrielson Heads Carthage Hydrocol

GUY GEORGE GABRIELSON, general counsel of Carthage Hydrocol, Inc., since its organization several months ago, has been elected president of the company. The company was formed to manufacture gasoline from natural gas and is preparing to erect a \$15,000,000 plant near Brownsville, Texas.

According to the company announcement, Mr. Gabrielson, who is a graduate of Harvard Law School, will continue his practice in New York City.

Cooking Equipment Catalog Ready

HOW To Increase Your Cooking Profits, a catalog of modern restaurant equipment, will be ready for distribution in the early part of October.

The need for new equipment is so great several gas companies requested Fenton Kelsey Company, publishers of "Cooking For Profit," to assemble in one catalog all the best gas cooking equipment. Here, for the first time since pre-war days is a booklet in which the restaurant operator can examine and compare all the major types and makes of commercial gas cooking appliances.

The catalog will run 24 pages, in two colors, and will show more than 95 types of equipment made by over 30 of the leading manufacturers of gas appliances. No equipment will be included which has not won the approval of the industry. Sections will be devoted to ranges, ovens, broilers, grills, fryers, hot food tables, toasters, dishwashers, water heaters, coffee makers, vegetable steamers, and special equipment.

Gas companies can localize the catalog by using a company imprint on the front and back covers, or by special copy on the back

page at a very low cost. Prices for the catalog will be based on quantity ordered and will range from ten cents on orders over 5,000 to fifty cents for single copies.

Gas companies interested may get full details from Jack Young, Business Manager, Fenton Kelsey Company, 114 South Carroll Street, Madison 3, Wisconsin.

entered in the competition this year, according to "Financial World."

Judging is done from the standpoint of content, format and typography, by a panel of nationally-recognized authorities. Production of the Seattle Gas Company's 56-page report was supervised by Honig-Cooper Company of Seattle.

Seattle Annual Report Wins "Oscar"

THE Seattle Gas Company won the "Oscar" for the best annual report published in 1946 by the gas industry, in the Sixth Annual Survey of Corporate Reports conducted by the magazine "Financial World."

The trophy will be officially awarded to the Seattle firm's president, N. Henry Gellert, at the Annual Report Awards Banquet to be given in the Grand Ballroom of the Waldorf-Astoria Hotel in New York, October 4. Charles M. Sturkey, vice-president and general manager, will also attend.

More than 3,000 annual reports from various industries in the United States, Canada, Latin America, Europe and Australia were

Natural Gas Line Nears Completion

IF favorable weather conditions prevail and if supplies of materials are made available as needed, The Manufacturers Light and Heat Co. anticipates a November 15 completion of its new 20-inch natural gas line from the West Virginia border to a point west of Pittsburgh in the vicinity of Coraopolis, Pa.

According to Irving K. Peck, vice-president and general manager of the company, the contracting firm of Williams Bros. Corp., Tulsa, Okla., has now completed the grading of 54 miles of right of way, and has placed 28 miles of pipe along the route ready for immediate construction.

Obituary

DR. GILBERT E. SEIL, nationally known chemist and metallurgist, died September 12 in Pennsylvania Hospital at the age of 57. He had undergone an operation two weeks before.

Born in Brooklyn, Dr. Seil was with the Metal and Thermit Corporation in New York, 1915-19, and was a Fellow at Mellon Institute, Pittsburgh, 1920-23. He was named head of the Pioneer Research Division of the Koppers Company in 1923 and was appointed technical director of E. J. Lavino & Co. here in 1926.

Dr. Seil was an active member of the Technical Section of the American Gas Association and particularly of its Chemical and Gas Chemists' Handbook Revision Committees. He was also a member of the "Fuel-Flue Gases" Book Revision Committee.

He also was a technical consultant to Day & Zimmerman, Inc., engineers, and in 1940 was named to the Technologic Committee on Manganese, which the National Research Council of the National Academy of Science formed at the request of the Council of National Defense.

He leaves a widow, Mrs. Frances J. Seil.

THOMAS E. RATCLIFF, 70, retired vice-president and treasurer, Standard Gas Equipment Corp. of Baltimore, died last month after a protracted illness. He was a native of Hamilton, Ohio.

Mr. Ratcliff began his career in Baltimore

in 1911 in the position of assistant manager of the Baltimore Gas Appliance and Manufacturing Co., which later became part of the present Standard Gas Equipment Corp. His first connection with the Standard Gas organization was as secretary. Later he became vice-president.

Because of his years of activity and interest in the gas business, he was well known in industry circles. Mr. Ratcliff held membership in the Masonic order, the Kiwanis Club and the Country Club of Maryland.

FRED A. ALLEN, assistant supervisor of the Pacific Coast Branch of the American Gas Association Testing Laboratories, died suddenly of a heart attack in his office on September 17. He was 44 years old, having been born in Malvern, England, on December 22, 1901.

Mr. Allen went to Cleveland from England in 1910. He was graduated from Case School of Applied Science in 1924 with a degree in electrical engineering and joined the Laboratories' staff over twenty years ago. With the exception of two years spent with the Tappan Stove Co. of Mansfield, Ohio, early in his career, Mr. Allen was continuously employed by the American Gas Association.

Shortly following Mr. Allen's transfer to Los Angeles in 1931 he was made assistant supervisor of the Pacific Coast Branch. In 1934 he married Alice M. Poekes of LeMars, Iowa, who survives him, together with a brother, John J. Allen of Barrington, R. I. He was a member of Sigma Nu fraternity, the Exchange Club of Los Angeles and the Oakmont Club of Glendale. Golf and gardening were his hobbies.

Associated Organization Activities

Oklahoma Gas Division Holds Annual Meeting

THE annual meeting of the gas division of the Oklahoma Utilities Association was held September 20 at the Biltmore Hotel, Oklahoma City, Okla. A large number of utility delegates from that territory attended the meeting, which was under the chairmanship of C. B. Day, district manager, Consolidated Gas Utilities Corp., Backwell.

John Turner, Jr., staff assistant, Oklahoma Natural Gas Co., Tulsa, gave an able address on "Customer Accounting." "Importance of Better Customer Service and How to Accomplish It" was discussed by D. E. Frieden, manager, Zenith Gas System, Inc., Waynoka. E. C. McAninch, district manager, Oklahoma Natural Gas Co., Ardmore, spoke on "Promoting Better House Piping." The morning session was concluded with "Does the Public Consider Your Gas Company an Ogre or a Neighbor?", which was delivered by Will C. Grant, advertising director, Lone Star Gas Co., Dallas.

Following a luncheon meeting at which A. F. Potter, president, Oklahoma Utilities Association, presided, Ralph Miller, chief engineer, Nordberg Manufacturing Co., Milwaukee, presented a paper on "Adaptability of Gas to the Diesel Cycle." "Dealer Cooperation Through Home Service Departments" was next on the program, given by Don Warner, new business manager, The Gas Service Co., Wichita. This was followed by "What's New in Gas Appliances," by Eugene D. Milener, coordinator of general research, American Gas Association. M. H. North, director of advertising and sales promotion, Oklahoma Natural Gas Co., Tulsa, presented the final paper of the afternoon session, entitled "A New Sales Tool."

I. N. G. A. A. Meeting

PLANS are now being completed for the 1946 Annual Meeting of The Independent Natural Gas Association of America, which will be held in November. Joseph Bowes, president, Oklahoma Natural Gas Co., Tulsa, is chairman of the arrangements committee. He is assisted by C. H. Zachry, E. C. Joullian, F. S. Kelly, Jr., and E. F. Schmidt.

Pacific Coast Gas Association Convention Is Outstanding

THE future development of the gas industry, particularly in the West, provided the major theme for the 53rd Annual Convention of the Pacific Coast Gas Association held at the Fairmont Hotel in San Francisco on September 10-12. The meeting attracted a record-breaking attendance.

Keynoting the opening session, H. W. Edmund, president of the Association and vice-president and general manager, Coast Counties Gas & Electric Company, reviewed the many activities conducted by the Association during the past year. These ranged from work with state agencies to the production of a new sound-color motion picture and involved the active participation of more than a thousand committee men.

Looking to the future Mr. Edmund urged the gas industry's support for kitchen venti-

and pledged the support of the manufacturers to a stabilized production pattern that would work to the best interests of the utility, the manufacturer and the public.

The promotional theme designed to reveal plans, tools and materials by which the gas industry may build its own future was continued throughout the other sessions.

In a well-attended breakfast meeting sponsored by the Home Service group, James I. Gorton, "CP" promotional director of G.A.M.A., reveals plans for "CP" promotion and pointed out the important part the home economists play in building good public relations and increasing loads.

The "CP" program was again spotlighted by Carl Sorby, vice-president, George D. Roper Corp., and chairman, "CP" Range Manufacturers Group, in a colorful, amusing



Le Roy M. Edwards



A. H. Sutton



D. G. Martin



J. S. Moulton

lation and the coordination of advertising and promotional activities in order to make the most effective use of available funds, which, he declared, were far less than those expended by competing industries.

The work of the national associations was given a prominent place on the program. R. H. Hargrove, first vice-president and chairman of the Natural Gas Department, A. G. A., and vice-president and general manager of the United Gas Pipe Line Co., outlined the work of the American Gas Association. He revealed that the gas industry today is serving more than 20,500,000 customers and represents an investment in excess of 5 billion dollars.

National advertising, publicity, and promotion were discussed by Mr. Hargrove as he reviewed the substantial returns being enjoyed by the industry as a result of these activities.

J. E. Drew, assistant director of promotion, A. G. A., continued the story of the promotional work of the Association and emphasized the variety and practical nature of the material being produced.

H. Leigh Whitelaw, managing director of the Gas Appliance Manufacturers Association, reviewed the work of his association

and convincing presentation of the "CP" program and its advantages to the industry. This was followed by the demonstration of the New Freedom Gas Kitchen as conceived by Servel, Inc.

The New Freedom Gas Kitchen program again came in for attention when H. V. Potter, director, New Freedom Gas Kitchen Bureau, A. G. A., presented his program and its objectives.

The Pacific Coast Gas Association's new-color motion picture, *The Miracle Flame*, received its premiere when it was presented by R. R. Gros, chairman, Cooperative Advertising Committee and manager of advertising and publicity, Pacific Gas and Electric Co. It is an educational production showing the origin, development, distribution and use of gas, particularly natural gas, and met an enthusiastic response.

Employee training procedure occupied an important part of the program and demonstrations in the right and wrong methods of employee training and relations were presented. A feature of the employee relations training program, which occupied an entire session, was the presentation of a slide film on gas range salesmanship developed by the Association. This was under the direction of

R. C. Terradell, supervisor, sales training, Southern California Gas Company.

Among the highlights of the program were talks on the Texas pipe line by Arthur F. Bridge, vice-president and general manager, Southern Counties Gas Co. and a discussion of the future of the Pacific Coast gas industry with some reference to industrial sales by Roy A. Wehe, assistant director, Public Utilities Department, California Railroad Commission. Mr. Wehe's address is published elsewhere in this issue.

The closing afternoon of the Convention was devoted to sectional meetings with large crowds attending the Accounting, Technical and Sales and Advertising sections. Throughout the convention guest speakers addressed luncheon meetings and special sessions were held by the Home Service group and the Women's Committee.

The Manufacturers' Section held its annual meeting on the morning preceding the opening of the convention. It was in charge of E. T. Howard, Fraser and Johnston Company, and featured reports of product divi-



R. R. Blackburn



C. H. Gueffroy

sion chairmen as well as a speech by Harold Massey, assistant managing director, Gas Appliance Manufacturers Association, outlining G.A.M.A.'s service to its members.

The convention reached a brilliant climax with its annual banquet at which awards were made and new officers installed.

The highly-prized awards were as follows:

P.C.G.A. Committee Award—to the Committee on Water Heater Sizing, Co-Chairmen C. H. Potter, Southern Counties Gas Co. and Claude F. Ballinger, Republic Heater Corporation.

Honorable mention for outstanding industry service—A. F. Bridge, vice-president and general manager, Southern Counties Gas Company, for his thesis on the Texas Pipe Line, and to K. L. Bossey, Pacific Gas and Electric Co., for his paper "Better Relations Through Personalized Collection Practices."

The Basford Trophy for Section Activity—won by the Accounting Section, J. W. Vanier, chairman, Southern California Gas Company.

Special Award (Servel Presentation—\$500 award)—John G. Nordin, Southern California Gas Company, for developing a method of adaptation of flue treatment to water used in the evaporative cooler.

The new officers of the Pacific Coast Gas Association are:

President—LeRoy Edwards, vice-president and general manager, Pacific Lighting Corporation, Los Angeles.

Vice-President—A. H. Sutton, president, Mission Appliance Corporation, Los Angeles.

Secretary—C. E. Johnstone, managing director, P. C. G. A., San Francisco.

Treasurer—D. G. Martin, general auditor, Pacific Gas & Electric Co., San Francisco.

Directors: R. R. Blackburn, secretary and general agent, Southern California Gas Co., Los Angeles; N. Henry Ge'lert, president, Seattle Gas Co.; C. H. Gueffroy, vice-president, Portland Gas and Coke Co.; Henry Honer, president, Western Stove Co., and J. S. Moulton, executive engineer, Pacific Gas & Electric Company, San Francisco.

The board itself elected a new director, Roy T. Richards, general superintendent, Central Arizona Light and Power Co., Phoenix.

New England Managers Conference

THE program for the Company Managers Conference of the New England Gas Association, held in Boston, September 26, was believed to be the first of its kind in the gas industry.

The program consisted of seven speakers, who presented the most important activities and plans of the American Gas Association, The Institute of Gas Technology and the Gas Appliance Manufacturers Association, to give the company managers an over-all view of the work of these three national gas industry associations.

E. S. Pettyjohn, director of the Institute of Gas Technology, presented the program of his organization and H. Leigh Whitelaw, managing director of G.A.M.A., spoke for his organization.

H. Carl Wolf, managing director of the A. G. A., J. W. West, Jr., assistant managing director, R. M. Conner, director of the A. G. A. Laboratories, Eugene D. Milener, coordinator of general research, and Edwin L. Hall, secretary-coordinator of the Gas Production Research Committee, discussed various phases of the A. G. A. program.

Canadian Convention

THOMAS WEIR, president, Canadian Gas Association, has announced that the fortieth annual convention of that association will be held at the General Brock Hotel, Niagara Falls, Ontario, June 16-18, 1947. Plans for the convention are now under way.

New Jersey Meeting

THE New Jersey Utilities Association has announced that the thirty-first annual meeting will be held at the Seaview Country Club, Absecon, N. J., November 22-23. A meeting of the Association's Executive Committee will be held before the annual meeting on November 21.

Gas Short Course Proves Success

MORE than 200 from 10 states attended the first short course on Gas Technology held at Texas College of Arts and Industries, August 27-29, which was sponsored by Southern Gas Association to study dehydration of foods, natural gas transmission and air conditioning.

Dean A. Strickland, Houston, president of the Association, and Frank S. Kelly, Jr., Arkansas-Louisiana Gas Co., Shreveport, presided at the general assemblies.

Curriculum of the three-day course which included 12 hours of classroom and laboratory instruction included two general assemblies and open forum discussions in the group classes. Transmission classes covered dehydration of natural gas, instrumentation and corrosion control. Those attending the air conditioning classes studied the principles of this subject, methods of computation in installation and design of air conditioning systems, and air distribution design.

Those taking the dehydration of foods and agricultural products course studied the possibilities in this field as well as the problems of heat control and dehydration techniques of rice drying, lumber drying, alfalfa and other products.

Field trips were taken to installations in the vicinity, including a cycling plant of the Chicago Corp., and a gas dehydration plant of Tennessee Gas & Transmission Co., both near Kingsville, and the Evergreen Farms' cereal grass dehydration plant at Raymonville, Texas.

Mid-Southeastern Annual Meeting

THE Mid-Southeastern Gas Association will hold its eighth annual meeting at the Sir Walter Raleigh Hotel, Raleigh, N. C., November 21-22.

Advance plans for the program include discussions on conversion to LP air-gas operation and distribution, fundamentals of employee and sales training, accounting problems, coal-gas manufacturing, water-gas manufacturing, distribution questions, an illustrated lecture on the atomic bomb, as well as other interesting and timely topics.

Prepared Atmospheres

A SERIES of articles will appear in *The Iron Age*, starting with the September 19 issue, on prepared atmospheres by Edward J. Funk, Jr., and David Lee von Ludwig. They are a theoretical and practical study of some of the controversial points now existing between what have come to be considered as standard types of prepared atmosphere machines. They merit wide distribution and careful study by all persons interested in the subject. As a result of the study some of the many types of machines may be discontinued.

CALIFORNIA UTILIZATION PROBLEMS

(Continued from page 423)

but little question that it is most desirable to maintain fairly uniform marketing policies, especially where no one section, for any considerable time period, has any assurance of a more sustained gas supply than the other. Further than this, it may be urged that our natural resources belong to the state as a whole and should be utilized for the benefit of the whole state and for no one section. I am happy to be able to say to you that there is much constructive thinking along these lines and we may look with considerable confidence to a plan that may bring this coordinated action about.

It is not believed that the possible curtailment in the production of the dry gas fields, particularly Rio Vista, resulting from such a coordinated program, would be of such magnitude as to give concern unduly to the operators of those fields from the point of view of the latter's interests (loss in earnings). It may be said that the rate of production that the Rio Vista field was stepped up to during the war years was higher than contemplated and, in fact, so high that a continuation of such high production might even jeopardize the full ultimate gas recovery from the field.

Conservation Through Coordinated Action

Gas, as you know, not only moves through your industry to the public from the Rio Vista and other fields, but likewise it moves directly from certain producers to their plants for refinery and industrial operations. Utility withholding of gas in these fields would thus be only partially effective. A successful and fair utilization program must be in effect during the initial period of out-of-state gas deliveries and can only be most effectively carried out through coordinated action of both the producers and the utilities.

Yes, because of the price disparity between oil and gas, there are difficult economic problems to be solved in working out any coordinated plan, but where there is a will there is a way. Let's have no failure merely because one industry is not subject to the same kind of governmental controls as the other. There should be no need for any regulatory re-

quirements—rather a program of proper utilization should proceed on its merits and the public interest involved. This is an opportunity to demonstrate that private industry is capable of effectively handling its affairs in the light of public requirements.

To the Future:

Closely associated with these problems that I have called to your attention is even a broader one encompassing all of these others to a certain degree—because this latter relates essentially to your philosophy of thinking as to the manner of looking to the future in reference to a marketing policy.

Are you of the natural gas industry going to gradually withdraw from and restrict service—and I have now in mind particularly firm industrial service—because of the lessening in future gas supplies that are readily available—or are you going to hold to the thinking that you are in the business to supply gas and that you will supply all the gas that the public reasonably requires for a healthy state economy? The latter type of thinking is more likely to result in securing the necessary gas requirements—yes, it may be said with considerable confidence, it will result in an adequate gas supply. Let all our thinking be one pointing to an economy of plenty and not an economy of scarcity.

Your industry is one of the basic industries as it supplies one of the essential human wants—fuel for industry—fuel for human livelihood and comfort. There should be no real concern of the future as the same relates to the fundamentals of your industry, so long as you maintain healthy thinking, proper objectives, and keep abreast of technological developments. Is this concept of "plenty" contrary to the conservation concept? I do not think so. Conservation of our gas supply does not mean hoarding in the narrow sense of that word, rather a wise, judicious and efficient use of our gas so there is a proper correlation between the different fuels available and the use requirements.

Problems of Regulation

While there are many other problems of gas supply and utilization, I'll pass over these and touch on the problem of regulation. I am sure you think of it, or we—at times at least—as some sort of a

problem. We're all probably pretty much weary with regulation—and vice versa. I find myself on this end of the work and it is only natural that I like to tell myself that the kind of work performed by the California Railroad Commission is not subject to all the criticism that has been heaped upon some of the Federal agencies during this recent period. We have endeavored to be helpful, constructive, and have given of our support to bringing to a realization of those matters that will result in a common and a public interest.

While statutory provisions likely will not lessen regulatory requirements, yet I personally feel that, to the extent that it can be done within the statutes, those regulated should be given the opportunity to assist in their own regulating. The Commissions and their staffs can, so to speak, lay out the rules of the game and generally supervise them, but leave a part for you to do. Likewise regulatory authorities can lead the way and take the initiative in many matters in which you are concerned but where there may be varying private and local views, as in some of the problems just discussed. In a word, if regulation and private industry are to justify themselves and survive, we must be able to adapt ourselves to changing economic and social conditions and be constructive. This should give management the necessary freedom to cope with the rapidly changing problems found and it is hoped that our utility managements will shed some of their complacency and step out with new vigor and more of the dynamic qualities found in the earlier years. Yes, as illustrated now by bringing in the new gas supply, let that type of action be multiplied in all manner of thinking and activities. If we each do our part in our own respective fields, we can look with confidence to the challenges of the future.

TAX ADMINISTRATION

(Continued from page 447)

indicate that the farm-marketing and purchasing cooperative groups have assets in excess of \$728,000,000.00. It is known to many that cooperatives are engaged in competitive businesses. Certainly the magnitude of these exemptions in this field warrants a further review by the Congressional committees as to whether some effort should be made to tax cooperatives, regardless of political repercussions, in what are commonly referred to as the agricultural states. The taxpaying public ought to know and business groups such as

assembled here ought to see to it that they fully understand the effect of this cooperative movement. It is not to be gathered that I am opposed to the cooperative movement, not at all. It is simply my view that a substantial segment of American business is not carrying its share of the tax load, and I am not sure that that is the wish of the majority of the taxpayers.

Referring briefly to the community property problem, it would seem to me that citizens generally have the right to expect that the same proportion of tax should be paid by a husband and wife residing, for example, in Massachusetts, or Georgia, as they pay in California and Texas. Frankly, I have never been able to understand why the majority of the taxpaying citizens of this country have been willing to contribute revenue to the Federal government out of proportion to the amount they should contribute. The problem is constantly becoming more aggravated as, for example, within the last few months the State of Oklahoma and the Hawaiian Islands have been granted the community property privilege. The Bureau of Internal Revenue and the Treasury, aside from the inherent unfairness in the community property situation, are especially interested in the problem because by its very nature it has contributed to such tax problems as we find in the family partnership field.

The growth of partnerships in the last five years has been tremendous. In 1939 there were 290,000 partnerships filing returns, whereas in 1944 the number had grown to 577,000. It is not unnatural that citizens in non-community property states should seek to utilize the family partnership means of reducing taxes. There are, of course, many other related problems, including joint ownership, assignments and transfers. The problem is not an insurmountable one, but requires legislation.

It is necessary for improved tax administration that there be administrative changes of procedure as well as technical changes in the statute, but to me the necessity of a balanced budget far transcends the other points in our need for tax revision. Years ago we used to think of taxes for revenue purposes only. I think that was probably my concept, certainly in the early days. I realize the same as you do, whether we like it or not, that high taxes are here probably for the rest of our several lives, both individual and corporate; although I believe that there will be some reduction in taxes next year, assuming that we keep the national income up to 150 billion dollars. But, nevertheless, there is a serious question facing us today, and that is whether in fixing taxes we should think also in terms of social conditions or in terms of breaking up large fortunes or large businesses, or whether we shouldn't rather be thinking of collecting taxes only for the purpose of running this Government and collecting taxes only for such functions as the people of this country think they ought to have.

I think we should only spend that amount of money we collect through taxation. We read a lot about it, but, again, I don't think the people of this country, and particularly

the business men, are making themselves felt back in Washington as they ought to do. I think this proposition transcends almost any other question you have today—deficit spending. Certainly it ought to end. Probably we will agree, in the light of the experiences in the last twelve or fifteen years, that this so-called pump-priming may be necessary occasionally, but certainly there ought to be an end to it. And yet here only within the last few weeks an appropriation of a billion dollars for agricultural relief was passed in Congress with little debate and practically no comment in the press. While we have become very used to talking in high figures, nevertheless when you start thinking of a possible budget of eighteen to twenty-five billion dollars—a billion dollars is a real substantial amount of money—then if the public wants Congress to appropriate a billion dollars, it ought to insist that the Congress also provide for the payment of that billion dollars through the collection of taxes. I think we should have a definite requirement that the Committee on Appropriations should have to consult with the Ways and Means Committee to find out how much money should be appropriated in the light of how much should be raised, or, stating it the other way, if we appropriate so many dollars, will the Ways and Means Committee provide for the payment thereof through the collection of taxes?

The matter of tax reduction is of paramount importance, and as much as it means to all of us to have taxes reduced and to have them reduced quickly, we ought to insist that there be no reduction unless we can do it without borrowing any more money. We all believe in a prosperous country, but it seems to me that continued borrowing will lead to national insolvency.



GAS COMPANIES*

- Bellewood & Monongahela City Natural Gas Co., Monongahela, Pa. (E. W. Gibbons, Vice-President)
The Blythe Gas Co., Ltd., Los Angeles, Calif. (L. R. Lackey, President & General Manager)
Farmers Gas Co., Coolidge, Arizona (D. B. Taylor, General Manager)
Gettysburg Gas Co., Pittsburgh, Pa. (C. E. Bennett, President)

* Names in parentheses are Company Delegates of the American Gas Association.

Honolulu Gas Co., Ltd., Honolulu, Hawaii (J. J. Winn, Jr., Vice-President & General Manager)

Kane Gas Light & Heating Co., Kane, Pa. (K. J. Zellhuber, Assistant Treasurer)

The Lake Gas Co., Russells Point, Ohio (Spalding Peck, President & Manager)

Missouri Power & Light Co., Jefferson City, Mo. (D. W. Snyder, Jr., President)

Natural Gas Co. of West Virginia, Pittsburgh, Pa. (C. E. Bennett, President)

Wak Company, Charleston, West Virginia (W. P. Smith, General Superintendent)

Westchester Lighting Company, Mount Vernon, N. Y. (E. P. Prezzano, President)

ASSOCIATE COMPANIES*

- Pacific Gas Corp., New York, N. Y. (H. W. Townsend, Vice-President)

MANUFACTURER COMPANIES*

Adams Manufacturing Co., The, Cleveland, Ohio (A. Katz, Treasurer)

Agerstrand Corp., Muskegon, Mich. (C. F. Agerstrand, Owner)

Air Products, Inc., Pittsburgh, Kansas (F. G. Hudson, President)

Atlantic Products Co., Atlantic City, N. J. (V. R. Beery, Partner)

Baier & Ackerman, Inc., New York, N. Y. (John F. Baier, Vice-President)

Barton Co., The, Minneapolis, Minnesota (D. I. Pulverman, Owner)

Blue Ray Gas Burner Co., Dearborn, Mich. (D. A. Stainbrook, Co-Owner)

Calgon, Inc., Pittsburgh, Pa. (C. L. Barksdale, Manager Micromet Division)

Century Engineering Corp., Cedar Rapids, Iowa (E. J. Lattner, President)

Cladon Corp., Azusa, Calif. (Donald MacDonald, President)

Consolidated Industries, Inc., Lafayette, Indiana (C. J. Merritt, Gas Design Engineer)

Daniels Tool & Engineering Co., Detroit, Mich. (Joseph B. Daniels, Owner)

Detroit Gas Regulator Co., Detroit, Mich. (John Brady)

Dole Valve Co., The, Chicago, Ill. (A. C. Goodrich, Secretary)

Dudley Engineering Co., Huntington, West Virginia (Roy A. Dudley, President)

Economy Governor Co., Anderson, Ind. (F. M. Pickering)

Electro Specialty Co., Minneapolis, Minn. (Willard A. Olsen, Resident Engineer)

Famous Furnace Co., The, Cleveland, Ohio (Hyman Blaushild, President)

Green Mfg. Co., Chicago, Ill. (Fred H. Green, Jr., Vice-President)

Hel-Mor Burner Co., Detroit, Mich. (Alvert D. Viancour, Chemical Engineer)

Hoffman Specialty Co., Indianapolis, Ind. (Allison F. H. Scott, Vice-President)

Hopwood & Associates, Inc., V. W., Cleveland, Ohio (J. W. Hopwood, President)

Horsman-Markin Corp., Detroit, Mich. (Walter A. Markin, Treasurer)

H. P. Products, Louisville, Ohio (Paul Schumacher, Partner)

Hubbert & Son Inc., Baltimore, Maryland (J. J. Hubbert, President)

Ingersoll Steel Div., Borg-Warner Corp., Kalamazoo, Mich. (K. H. Flint, Gas Engineer)
 Kaiser Fleetwings, Inc., Radcliffe, Bristol, Pa. (Paul L. Yager, Sales Manager)
 Ken-Joy Gas Burner Mfg. Co., Detroit, Mich. (Morris Newsky, President)
 MagiKitch'n Equipment Co., Quakertown, Pa. (Elsa Mertens Truninger, President)
 Mirror Patented Stove Pipe Co., Hartford, Conn. (Henry A. Kahn, Plant Manager)
 Modern Metals & Materials, Chicago, Ill. (Stanley R. Hood, Construction Engineer)
 Monad Products Co., Detroit, Mich. (John F. Mullen, Co-Owner)
 Morganite, Inc., Long Island City, N. Y. (F. W. Korfmann)
 Multi-Therm Mfg. Co., Inc., Detroit, Mich. (Samuel Schwartz)
 Nassif Co., David, Boston, Mass. (David Nassif)
 National Cornice Works, Los Angeles, Calif. (M. L. Silverstone, Manager Atlas Division)
 Pipe Line Service Corp., Franklin Park, Ill. (A. D. Imes, Vice-President)
 Premier Stove Co., Belleville, Ill. (O. W. Wegener, Treasurer)
 Remington Rand, Inc., New York, N. Y. (H. B. Matheny, Systems Division)
 Revere Products Inc., Detroit, Mich. (Roger H. Poirier, Partner)
 Rochester Appliance Corp., New York, N. Y. (Victor Siber, General Manager)
 Royal Heaters, Inc., Alhambra, Calif. (R. T. Lowrie, Sales Manager)
 Sanitaire Co., The, Los Angeles, Calif. (W. G. Saffold, Vice-President & General Manager)
 Sharples Corp., The, Philadelphia, Pa. (C. E. Printz, Sales Manager)
 Silex Co., The, Hartford, Conn. (Douglas A. Lapham, Commercial Manager)
 Sprouse Co., Inc., V. E., Columbus, Ohio (V. E. Sprouse, President)
 Stok-A-Fire Co., Inc., Webster Groves, Mo. (Roy F. Graham, Vice-President)
 Supreme Gas Burner Mfg. Co., Detroit, Mich. (V. R. Jones, President)
 Swett & Co., George E., San Francisco, Calif. (J. M. Coffin, Engineer)
 Sylphonaire Inc., Alhambra, Calif. (H. B. Gibbons, Secretary-Treasurer)
 Thermal Development Co., Cuyahoga Falls, Ohio (R. M. Howe, General Manager)
 Universal Milking Machine Div.-Natl. Cooperatives, Inc., Waukesha, Wisc. (A. G. Rose, Manager)
 Westlake Products Co., Toledo, Ohio (Walter A. Groth, Vice-President)

INDIVIDUAL MEMBERS

Alfred L. Adams, Metropolitan Utilities District, Omaha, Nebr.
 Allen Addicks, Robbins Publishing Co., Cleveland, Ohio
 Daniel Alexander, Pacific Gas & Electric Co., Marysville, Calif.
 Doris H. Allen, Southern California Gas Co., Los Angeles, Calif.
 Sydney Alling, Rochester Gas & Electric Corp., Rochester, N. Y.

D. B. Allison, Philadelphia Gas Works Co., Philadelphia, Pa.
 Margaret W. Andersen, Michigan Consolidated Gas Co., Ann Arbor, Mich.
 G. A. Anderson, Gas Consumers Ass'n, c/o Norwalk Valve Co., S. Norwalk, Conn.
 Ivan G. Anderson, The Peoples Gas Light & Coke Co., Chicago, Ill.
 Louise F. Anderson, Iowa Power & Light Co., Des Moines, Iowa
 Edwin W. Andrews, The Peoples Gas Light & Coke Co., Chicago, Ill.
 Paul W. Bachman, Commercial Solvents Corp., Terre Haute, Ind.
 Willard J. Ball, The Peoples Gas Light & Coke Co., Chicago, Ill.
 John R. Barnhill, South Atlantic Gas Co., Savannah, Ga.
 J. J. Barrett, Pacific Gas & Electric Co., Marysville, Calif.

Stuart J. Barrett, The Peoples Gas Light & Coke Co., Chicago, Ill.
 Sam M. Barrow, Michigan Consolidated Gas Co., Detroit, Mich.
 Emil J. Bartel, Brooklyn, N. Y.
 Frieda Barth, Michigan Consolidated Gas Co., Detroit, Mich.

Harry E. Bates, The Peoples Gas Light & Coke Co., Chicago, Ill.
 Chauncey W. Baughn, The Portsmouth Gas Co., Portsmouth, Ohio.
 Frank I. Baxter, Panhandle Eastern Pipe Line Co., Chicago, Ill.
 Seymour J. F. Beale, Derbyshire Silica Fire Brick Co., Ltd., Derbyshire, England
 Ernest S. Beaumont, The Peoples Gas Light & Coke Co., Chicago, Ill.

(Space does not permit publication of all new members. Other new members will appear in an early issue.)

Personnel Service

SERVICES OFFERED

Single woman (24), four years intensive Distribution training and experience. Duties: Office Supervision and Field Work consisting of vegetation and leak surveys and mapping of old and new construction. Proficient in use of combustible gas indicators and electronic pipe locators. Experienced in customer and employee relations. 1524.

Man with twenty-three years experience with two large Eastern gas companies in Fitting Dept., Appliance Testing Laboratory, Manager Industrial Fuel Dept., and Superintendent of Distribution. Combustion and Mechanical Engineer with nationwide manufacturing company over three years. 1523.

Chemical Engineer, B.S. Illinois Tech 1944, one and a half years experience in research and development on high temperature furnaces, preparation of super-refractories and oxy-hydrocarbon flames. Desires responsible position in production or development. Available immediately. (23), single. 1526.

Engineer—Nine years experience in Manufactured Gas Engineering, Production, Distribution and Service desires position with progressive utility. Former Lieutenant U.S.N.R. Licensed Professional Engineer. Member A. S. M. E., M. E. (34). 1527.

Controller—Accountant—Auditor—More than 20 years experience in executive positions as General Auditor of five companies comprising Gas, Electric, Street Railway, Telephone, Bus Utilities. Handled all Treasury matters, Taxes and instituted sales promotion programs, public relations policies. Also have had experience as Division Manager in Natural Gas Operations. (50). 1528.

Home Economist—Graduate, ten years well-rounded experience as Home Service Representative, Consultant, Supervisor, Head Teacher and Instructor in Foods. Outstanding experience in conducting consumer, employee and dealer educational programs. Can prepare and execute comprehensive field programs. Will consider opportunity leading to eventual Director small department or assistant larger department. 1529.

Draftsman—12 years public utility experience in sub-service work such as electric systems, gas mains, water and sewer systems, manholes, service boxes and subsidiary duct lines; 8 years topographical work; 5 years experience in all kinds of piping systems such as steam, firemans, hot, cold and oil piping systems. 1530.

General or Sales Manager, twenty-five years experience industrial and public utility engineering, valuation, administration and sales. Recently returned five years Naval Service. Now practicing as mechanical consultant. South or Southwest preferred. 1531.

POSITIONS OPEN

Experienced Production and Distribution Superintendent of proven ability, under forty years of age, as Assistant to Superintendent of Gas Operation. Properties total 80,000 meters. State age, education, experience, salary desired, and date available. 0465.

Corrosion and Cathodic Protection Engineer. Graduate Engineer under 35 with some experience to supervise, direct and coordinate work of this character in connection with transmission of natural gas in Montana and the Dakotas. 0466.

Company engaged in extensive and continuing program of changing over client manufactured gas companies to natural or liquefied petroleum gas has several attractive openings on supervisory staff for gas engineers with training in conversion work or with adequate experience in gas distribution and utilization. 0467.

Natural Gas Meter man between 25 and 45 years old, who can install, repair and test natural gas meters. Permanent position. 0468.

Measurement and Gas Metering Engineer. Graduate Engineer under 35 with experience to supervise and direct measurement and testing in connection with production and distribution of natural gas in Montana and the Dakotas. 0469.

Distribution Superintendent manufactured gas company in Southeast with 20,000 customers. Have charge of distribution, appliance servicing, meter shop and automotive equipment. 0470.

Gas Engineer with experience on layout and operation of manufactured gas plants and distribution systems wanted by general gas engineering organization. Reply giving details of age, education and experience. 0471.

Local Representative for gas property. Position now available for man experienced in natural gas distribution. Property located in North East, Pennsylvania. Must be capable of doing all work in connection with the operations of property consisting of 1100 consumers meters and all natural gas production. Write stating salary, experience and giving references. 0472.

Production Engineer. Experienced Engineer in Water Gas Manufacture who desires a position with a progressive company located on the Atlantic Coast. State age, experience and salary desired in first communication. 0473.

Experienced Distribution Engineer, familiar with high and low pressure, customer requirements of metering and appliance servicing. Supervisory position eastern company having a rapid expansion program. State age, experience, time when available and salary required. 0474.

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